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CONTENTS AND SUBJECT INDEX

College Education for the Future Doctor. James B. Conant, Ph.D., Cambridge, Mass.....1655
General Education. Robert M. Hutchins, LL.D., Chicago.....1657
Clinical Pediatrics. Amos Christie, M.D., San Francisco.....1660
The Community Hospital. Barry C. Smith, New York.....1664
Anesthesiology. Ralph M. Waters, M.D.; Hubert R. Hathaway, M.D., and William H. Cassels, M.D., Madison, Wis.....1667
Sodium Sulfapyridine. E. K. Marshall Jr., M.D., and Perrin H. Long, M.D., Baltimore.....1671
Acute Myocardial Infarction Not Due to Coronary Artery Occlusion. Charles K. Friedberg, M.D., and Henry Horn, M.D., New York.1675
Removal of the Thymus. E. I. Hashimoto, M.D., and C. B. Freudenberger, M.D., Salt Lake City 1680
Kahn and Wassermann Reactions in Infectious Mononucleosis. Joseph F. Sadusk Jr., M.D., New Haven, Conn. 1682
Vertebral Fractures Produced by Metrazol-Induced Convulsions. Phillip Polatin, M.D.; Murray M. Friedman, M.D.; Meyer M. Harris, M.D., and William A. Horwitz, M.D., New York.....1684

CLINICAL NOTES

Purpura Haemorrhagica Following Use of Sedormid. Teresa McGovern, M.D., and Irving Wright, M.D., New York.....1687
A Sign of Ulnar Palsy. Robert Wartenberg, M.D., San Francisco.1688
Use of Serum Tellurite Agar for the Isolation of Pneumococci. Elizabeth Petran, Ph.D., Baltimore.1688

COUNCIL ON PHYSICAL THERAPY

Fever Therapy by Physical Means. Frank H. Krusen, M.D., and E. C. Elkins, M.D., Rochester, Minn.1689

COUNCIL ON FOODS 1696

EDITORIALS

Obituaries Published in 1938....1727
Medical Education in the United States and Abroad.....1728
What Is Osteopathy?.....1728

CURRENT COMMENT

Phenylpyruvica Oligophrenia....1729
A Medical Society and Contagious Disease 1729
Papain 1729

ORGANIZATION SECTION

"Economical Administration of Health Insurance Benefits"...1730
Medical Legislation.....1731
Woman's Auxiliary.....1733

BUREAU OF LEGAL MEDICINE AND LEGISLATION 1757

(Subject Index on next page)

MEDICAL LICENSURE STATISTICS FOR 1938

Presentation by Council on Medical Education and Hospitals.....1697
Examining Boards in Medical Specialties 1723
Basic Science Boards.....1723
The National Board of Medical Examiners 1724

A.M.A. SESSION — *St. Louis* — MAY 15-19, 1939

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SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "Ml," Medicolegal; "ME," Medical Economics; "OS," Organization Section; "SS," Student Section.

A. M. A. St. Louis Session....OS-1731
Acid, ascorbic, in plasma in achlorhydria..ab-1760
ascorbic, in scurvy....ab-1767
-ash diet....1753
Acrodynia, infantile, etiology....ab-1772
Air conditions in houses....1748
Alcoholism, delirium tremens, treatment..C-1747
Amebiasis, treating, difficulty....ab-1769
American Association of History of Medicine.1737
College of Chest Physicians....1736
Laryngological, Rhinological and Otological Society....1737
Medical Golfing Association tournament..1737
Medical Women's Association....1737
Aminopyrine, action on granulocytes....ab-1776
Amniotic cavity, fibrin in....1753
Anemia and endocrine disorders....ab-1764
in low income group....ab-1764
pernicious, iron content of liver....ab-1776
pernicious, mental changes....ab-1775
Anesthesia, ether, preventing shock....ab-1765
Anesthesiology....*1667
Anesthetists, Ohio Society of....1736
Antigens, febrile, for diagnosis....1752
Anus disease, gastrointestinal signs....ab-1767
Aortic Valve stenosis (calcified)....*1675
Appendicitis, serotherapy....1739
Appendix, residue in roentgenogram....ab-1775
Arm, severed tendons and nerves....ab-1761
Arteries, coronary, occlusion....*1675
Arteriosclerosis of nervous system....ab-1773
Arthritis, paucity in psychosis....ab-1760
treatment, fever....*1694; *1695
Asthma, treatment, fever....*1694
treatment, roentgen....ab-1765
treatment, stellectomy....ab-1771
Bell Lecture by Dr. H. Sweany....1735
Blood picture in acute ileus....ab-1775
pressure, high, liver extract for....1748
pressure, high malignant, renal change..ab-1770
sedimentation in rheumatic infection...ab-1764
sugar, duodenal factor lowers....C-1747
sugar, low....ab-1771
transfusion of placental blood....ab-1770
Board Examinations....1754
Book Notices....1754
Books Received....Adv. page 36
Breast, gynecomastia....ab-1768
fibro-adenoma and cancer in male....ab-1773
Bureau of Investigation....1745
Bureau of Legal Medicine and Legislation..1757
Cancer in U. S. Navy....ab-1759
Chicago Medical Society and contagious disease....E-1729
Chlorinated hydrocarbons, exposure to..ab-1766
Correspondence....1747
Council on Foods....1696
Council on Medical Education and Hospitals..1697
Council on Physical Therapy....1689
Deaths....1742
Deaths of physicians....E-1727
Dementia Paralytica, treatment, fever....*1695
Dementia Praecox, metrazol convulsions cause spine fractures....*1684
Diabetes Mellitus, insulin and collapse therapy in tuberculous....ab-1762
surgery in....1738
treatment, duodenal factor....C-1747
Diapers, washing, soaps for....1752
Douche, complex alkali vaginal....1750
Duodenum, hypoglycemic factor....C-1747
Economics, medical, symposium, Detroit....1735
Education, general, subject matter of....*1657
Empyema, tuberculous, prevention....ab-1770
Endocarditis lenta, fever therapy....*1694
Epilepsy, body build differences in....ab-1761
petit mal, pyknolepsy....1752
possible equivalent....1752
Erythema nodosum and tuberculous lymphadenitis....ab-1769
Erythroblastoses of newborn....ab-1772
Fetus membranes, spontaneous rupture....1753
Fever, therapeutic....*1689
Finger, little, abduction in ulnar palsy....*1688
loss of, artificial appendage for....1753
Fistula, anal, and tuberculosis....ab-1771
Foreign Letters....1738
Fröhlich Syndrome....1752
Furunculosis, roentgen therapy....ab-1771
Gallbladder empyema....1750
Glycogen, disintegration....ab-1774
Gold jewelry, black dermographism from...1749
Gonorrhea, treatment by fever....*1694
Graduates, Canadian, examined....*1701
examined by state boards....*1698; *1702
failures....*1703; E-1728
foreign....*1716; *1718; *1720; *1721
of unapproved schools....*1712; *1715
Gynecology, refresher courses, Ariz....1734
Hay Fever, hypersensitivity changes in..ab-1774
Heart insufficiency, digitalis in....1753
muscle infarction....*1675
Hincks, C. M., successor appointed....1737
Hip Joints, arthrodesis in tuberculosis of..ab-1769
Homeopathic boards, examination....*1701
Hospitals, community, what it should be...*1664
"House of Health," Germany....1740
organization, complete war time plan....1738
Industrial, anemia in low income group..ab-1764
dermatitis from red lead....1749
exposure to chlorinated hydrocarbons..ab-1766
miners' dyspnea....ab-1770
Infectious Disease in 1938, Germany....1740
Chicago Medical Society and....E-1729
Influenza, active virus....ab-1760
Insurance, health, economical administration....OS-1730
Internships, required....*1711; *1713
Intestines, acute ileus....ab-1775
Jackson, Edward, portrait....1734
Kahn Test in infectious mononucleosis....*1682
Lane Lectures by Dr. Rivers....1734
Lead, red, dermatitis from....1749
Legislation, medical....OS-1731
Lewis, Dean, resigns....1734
Licensure....*1697; E-1728
basic science boards....*1723
Canadian graduates examined....*1701
certificates awarded by specialty boards..*1723
licenses issued by states, 1938....*1697
of foreign graduates....*1716; *1718; *1720; *1721; *1722; E-1728
of physicians, 1918-1938....*1717
registration by examination, reciprocity and endorsement....*1704; *1705; *1708; *1710; *1717
registration—1904-1938....*1715
registration of graduates of unapproved schools....*1712; *1715
registration, source of physicians....*1717
Liver extract for hypertension....1748
new roentgen method....ab-1774
Marriages....1741
Measles without exanthem....1752
serum available, New York....1735
Meat, tenderized, papain used for....E-1729
Medical Education in U. S. and abroad...E-1728
premedical requirements....*1655; *1711
teaching anesthesiology at Wisconsin...*1670
Medical Examinations and Licensure....1754
Medical Practice Acts: cosmetology; treatment of facial deformity....Ml-1758
Medicolegal Abstracts....1757
Meetings, Coming Meetings....1758
Meningitis, lymphocytic choriomeningitis..ab-1766
with clear spinal fluid in children....1740
Meningococcus septicemia, fever therapy...*1695
Menstruation disorders, build and obesity..ab-1765
Metrazol convulsions, spine fractures after..*1684
Miners' dyspnea....ab-1770
Moncrief, W. H., appointment....1736
Mononucleosis, infectious, positive Kahn and Wassermann reactions....*1682
Mycosis fungoides, fever therapy....*1695
Naphthalenes, chlorinated, exposure to..ab-1766
National Board of Medical Examiners....*1724
Navy, U. S., cancer in....ab-1759
Nephritis, chronic interstitial....ab-1770
Nervous System, sympathetic, tumors...ab-1766
Neuritis, treatment, fever....*1695
New York Academy of Medicine, graduate fortnight....1735
World's Fair, health precautions at....1735
News....1734
Nu Sigma Nu luncheon....1736
Nutrition diseases in infants....1741
Obstetrics, refresher courses, Ariz....1734
Oligophrenia, phenylpyruvica....E-1729
Ophthalmology, Association for Research in..1737
Osteopaths, registration....*1705; *1708; *1714; *1717
Osteopathy schools teach medicine?....E-1728
Papain, increasing importation....E-1729
Paralysis, ulnar, Wartenberg's sign....*1688
Parkinsonism, treatment....*1695; 1752
Pasteur Institute, 50th year....1739
Pediatricians, National Congress of....1740
Pediatrics, lectures on, Ky....1734
refresher courses....*1660
Peptic Ulcer, fever in....ab-1759
Peritonitis, perforative, serotherapy....1739
Phenylpyruvica oligophrenia....E-1729
*di*Phenyls, chlorinated, exposure....ab-1766
Phillips Medal to Dr. Spies....1736
Phlebitis, contralateral, years after injury..1753
Physicians added to profession....*1706; *1710; *1711
obituaries published in 1938....E-1727
Pneumococcus, serum tellurite agar for isolating....*1688
Pneumonia, lobar, serotherapy....ab-1776
control program, Illinois....1734
treatment, horse and rabbit serums and sulfanilamide....ab-1760
treatment, rabbit serum....ab-1763
treatment, sodium sulfapyridine....*1671
Poliomyelitis, acute anterior, mastic test..ab-1776
obstetric difficulties in....1735
Pregnancy, nontropical sprue and....ab-1773
spontaneous rupture of membranes....1753
Prontosil treatment of virus diseases....ab-1766
Prostate hypertrophy, hormones in....1741
Purpura, chronic localized gastric....ab-1759
haemorrhagica after sedormid....*1687
Queries and Minor Notes....1748
Radio Broadcasts....1731
Rectum disease, gastrointestinal signs in..ab-1767
Red Cross, advisory committee to....1736
Rheumatic Fever in childhood....ab-1764
treatment by fever....*1695
Rheumatism and growing pains....ab-1769
Rivers, T. M., Lane Lectures by....1734
Roentgen Rays, remove thymus by....*1680
Russell, James R., death....1738
Sclerosis, multiple, fever therapy....*1695
Scurvy, ascorbic acid in....ab-1767
Secretin, hypoglycemic factor....C-1747
Sedormid, purpura haemorrhagica after...*1687
Shoulder, acromioclavicular dislocation..ab-1767
Smallpox painful vaccination scar....1753
Society for Investigative Dermatology....1737
Society Proceedings....1758
Specialties, examining boards in....*1723
Spies, T. D., Phillips Medal to....1736
Spine fractures from metrazol shock....*1684
Sprue, nontropical, and pregnancy....ab-1773
Staphylococcus infections, specific anatoxin....ab-1772
State Board Examinations....1754
State Board examinations, failures.*1703; E-1728
required hospital internships by..*1711; *1713
statistics for 1938....*1697
Stevenson, George S....1737
Stomach acidity, ascorbic acid in plasma..ab-1760
purpura (chronic localized)....ab-1759
secretion, effect of partial gastrectomy..ab-1768
Sulfanilamide cause of convulsions?....1750
treatment, dermatitis after....ab-1762
treatment of pneumonia....ab-1760
treatment of virus diseases....ab-1766
Sulfanilyl sulfanilate in virus diseases..ab-1766
Sulfapyridine, sodium, intravenous use...*1671
Sweany, Henry C., Bell lecture by....1735
Syphilis (early primary), fever therapy...*1695
treatment, jaundice during....ab-1763
Tabes Dorsalis, treatment, fever....*1695
Tellurite, potassium, to isolate pneumococci.*1688
Terry Lecture (first) by Dr. Weed....1735
Tetany, treatment; low phosphorus diet..C-1748
Thiamin chloride, phenylpyruvica oligophrenia....E-1729
Thrombosis, coronary....*1675
Thymus, surgical vs. roentgen removal....*1680
Toe nails, change of color....1751
Tonics and Sedatives....Adv. page 30
Trauma, contralateral phlebitis years after..1753
Trichinosis, incidence....1751
Tuberculosis and anal fistula....ab-1771
pulmonary, complications....ab-1762
pulmonary, insulin and collapse therapy..ab-1762
treatment by fever....*1696
Typhoid Group Antigens for diagnosis....1752
Undulant Fever treatment by fever....*1696
University education for future doctor....*1655
of California refresher pediatrics courses.*1660
of Chicago plan....*1657
of Wisconsin anesthesiology department.*1670
Ureters transplantation....1741
Urology, Italian Society of....1741
Uterus, cancer, radiation therapy....ab-1761
Vaccination scar, painful, treatment....1753
Virus diseases, chemotherapy....ab-1766
Vitamin A, elimination in urine....ab-1774
C consumption in infants....ab-1773
deficiency, clinical vs. biologic cure....1739
Wartenberg's sign of ulnar palsy....*1688
Wassermann Test in infectious mononucleosis....*1682
Weed, L. H., Terry Lecture by....1735
Woman's Auxiliary....1733
Workmen's Compensation Acts: sinusitis, ethmoidal....Ml-1757
Yellow Fever, nervous system pathology..ab-1763

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COLLEGE EDUCATION FOR THE FUTURE DOCTOR

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CAMBRIDGE, MASS.

You will all remember the old definition of an expert as an ordinary man away from home giving advice. Although I am a fair distance from my academic base, I should like to think that I could qualify on other grounds as an expert on the subject that I am venturing to discuss this morning. What I have to say concerns premedical training and in a previous incarnation I spent a great deal of time with premedical students. I taught organic chemistry for some dozen or more years in the winter and in the summer to both men and women. I have written innumerable letters to many of the deans present in this audience, recommending in no uncertain terms people whom, I regret to state, I knew all too little about. Furthermore, I have taken part in innumerable discussions with other chemists from many colleges about educational matters and almost without fail the conversations turned to a discussion of some of the iniquities of the medical school admission committees. More recently I have had the opportunity of discussing educational matters with deans and college administrators and again the problem of the relation of medical schools to liberal arts colleges has repeatedly arisen.

According to statistics published a few years ago somewhat more than 50 per cent of the students entering the medical schools of the country complete a four year college course. Another 27 per cent finish three years of collegiate work. It is with these students who comprise about three quarters of the matriculants in our medical schools that I am concerned this morning. What sort of an education should these future doctors receive in college? It seems to me that we cannot answer this question in general terms. There probably are as many answers as there are students. But before we come to the difficult matter of prescribing for the future let us examine the present situation. Let us see how the premedical requirements of the various medical schools affect the present college education of the future doctor.

It is important to bear in mind that today there probably are two applicants for every position in a first year medical class. For certain of the schools, the ratio may run as high as ten to one. Certain effects of this competition I think have not been generally appreciated, though they are clearly evident to those teachers and administrators in our colleges who are concerned with premedical education. I have received testimony from many different colleges that the desire to present a convincing record of scientific work to impress the admission committee is a potent factor in determining a student's program. It is not a question of doing well in the minimum prescribed courses in chemistry, physics and biology. It is not a question of taking more science either as an educational discipline or because the student likes the work. It is merely a question of taking scientific courses solely to impress the medical school authorities.

I realize that officially almost every medical school is at pains to deny that any preference is given to candidates who have studied more than the minimum premedical subjects. I know that many deans, professors and members of the medical profession protest that what they all desire is a man with a liberal education—not a man who has been through four years loaded with premedical sciences. The trouble is very few people believe this group of distinguished witnesses —least of all the students. And since each case of acceptance or rejection of a candidate for admission to a medical school cannot be argued in open court and the decision of the committee duly publicized, misunderstandings and, indeed, fantastic rumors are bound to arise.

Now those who complain about the present situation (and their name is legion) are not necessarily opposed to a scientific course in a liberal arts college as a preparation for medicine. What they are opposed to is, first, what they believe to be the inconsistency between the theory and practice of the admission offices of the medical schools; second, the pressure on all students who want "to play safe" to take more than the minimum premedical requirements whether they are interested in science or not; and, third, the apparent failure of the medical schools to clarify their own desires with regard to even the minimum premedical requirements.

That there is some confusion in the medical faculties themselves in this matter of premedical requirements, I am sure this audience will agree. Part of the difficulty arises from the fact that the total professional training of a medical man must depend to some extent on his plans for the future. If he is to become a research worker in medical science he should study the fundamental sciences in considerable detail in college. If he is to be a general practitioner the minimum scientific premedical requirements may well suffice. Since this total professional training includes the college years, it is impossible to draw up blanket specifications for the college education of the future doctor without answering the question "What sort of a doctor is the man to be?"

Read before the Thirty-Fifth Annual Congress on Medical Education and Licensure, Chicago, Feb. 13, 1939.

A rather amusing illustration of the present confusion of opinion in the medical profession concerning premedical studies was brought out by replies to a recent questionnaire sent to a small group by the dean of one of our large medical schools. Members of the faculty and eminent practitioners living nearby sent in long letters. I have taken the liberty of combining extracts from these documents in what I must admit is a highly arbitrary manner. I assure you that the general effect which the following synthesized statement leaves in the reader's mind is not a bit more confusing than the effect of reading all the letters in toto. Here is the composite opinion as to premedical requirements:

> Good fundamental education in physics, biology, chemistry, zoology and comparative anatomy, he should have a reading knowledge of French and German . . . in addition to being well grounded in inorganic chemistry it would be desirable for the student to be well prepared in the elements of quantitative chemical procedures and in the laws governing the behavior of electrolytes in solution . . . The student's curriculum should include thorough courses in general zoology or general biology, comparative vertebrate anatomy and vertebrate embryology. The growing importance to the general physician of a knowledge of genetics makes a course in this subject very desirable . . . But it is to be hoped that the student would spend most of his time at college working in history, English and literature for the last chance most medical students have at any type of cultural courses is gone with the granting of the A.B. degree . . . [In summary] we would say that a student should bring with him to the medical school a fair degree of native intelligence, a fine character, an integrated personality and a training which has taught him the rudiments of the scientific manner of thinking . . . A modicum of factual knowledge in the special fields of chemistry and biology is also important.

The present situation is to say the least somewhat obscure. The difficulties of laying down one set of rules to cover the college education of all future doctors —even the scientific education—seems to be insurmountable. We are confronted with the fact that today the liberal arts colleges are expressing more and more dissatisfaction with the premedical requirements and the procedure of medical school admission committees. This dissatisfaction comes from presidents, deans and teachers of the humanities as well as from those directly concerned with teaching premedical subjects. What is to be done about it? I have heard only one concrete suggestion for a radical change that seems to me to offer hope. I venture to pass it on with enthusiasm, but without too much expectation that it will be accepted. The suggestion is as follows: Encourage college freshmen who are looking forward to a medical career to apply for admission to a medical school three years in advance. Let the admission committee base its rejection or conditional acceptance of such applications on the school record, on the first year college record, and on performance in such tests as the scholastic aptitude test. After the undergraduate in question has been tentatively enrolled as a future medical school student, let there be cooperation between the medical school and the college in working out through a joint committee an intelligent college program for the remaining three years. For those with a real scientific bent, concentration in chemistry or biology or a combination of the two may be in order. For others the main line of endeavor may be history or philosophy or literature with only the minimum amount of science. The program would be made to suit the student. The representatives of the medical faculty would have in mind the needs of the profession, and the representative of the college faculty would supply intimate knowledge of the student and the offerings of the institution in question. The joint committee should insist on every student's broadening out as much as possible during his college years. The fact that the medical school faculty was concerned with the college work of the premedical student would, I believe, lend an authoritative tone to any regulations which emphasized the importance of nonscientific studies. There are some undergraduates who follow more readily the guide of a professional faculty than the advice of college professors. In short, intelligent guidance would be possible. At present the competitive system and the mystery surrounding the science requirements put both the college teacher and the college student in a position where in many cases intelligent guidance is no more possible than in betting on a horse race. A further obvious advantage of the proposed scheme is that some 6,000 to 10,000 students who now prepare for medical school and fail each year to gain admittance would not be led down an educational path which comes to a dead end. Of course, even if this radical reform were widely adopted it would be necessary to reserve a certain number of places in each first year medical class for promising students who decided late in their college career to study medicine.

There are many objections to the proposal which I am sure are springing up in your minds. Most serious, at first sight, would be the difficulty of deciding at so early an age as to the promise or lack of promise of the boy in question. This difficulty is, I believe, not as great as might be assumed. The evidence available indicates that there is an excellent correlation between the criteria I have suggested and those usually employed (i. e. the total college record). If this is so, the mistakes would be no greater perhaps than now. The difficulties of judging as to the prospective student's character and personality are great, I admit. But, on balance, the advantages of such a scheme might outweigh the disadvantages.

Let me consider the question of the purely scholastic capacity of the student. At present this is estimated from the college record and from the letters that professors write about his actual ability in courses. The evidence which I have been able to gather indicates that there is a very close correlation, at least in Harvard College, between the work of the freshman year and the subsequent college record of the man. Furthermore, there is a fairly good correlation between many of the criteria which we use for admission such as school record and examination and the total college record. This being true, it is clear that there would be only a slight error introduced if the work of the freshman year and the school record were used as a basis for admission to the medical school instead of the present four years' work in college. To illustrate, may I give you a bit of evidence (I cannot claim it is conclusive) which I had gathered by the Assistant Dean of Harvard College. He examined the records of a group of men in Harvard College who went on to the Harvard Medical School and found the correlation coefficient between the freshman year's work and the whole college record to be 0.73 (significantly high). Or, to put the matter in more concrete form, let us suppose that the Harvard Medical School had selected from among the Harvard College candidates solely on the basis of their academic record. Of the first fifty-six men whom they would

take on the basis of their entire college record, forty-two would have been taken on the basis of the freshmen year alone. And, of the fourteen who would have been selected as freshmen but on the basis of their four year records would not have "made the grade," eight were borderline cases; and only six did very poor work during the remainder of their college career. There would have been six bad selections, but there is no reason at all why in such a scheme as I am suggesting acceptance might not be conditional on the student continuing to have a respectable record in the remaining three years of his college course. I think this evidence is enough to show that there is no very serious obstacle to the scheme from the point of view of estimating the student's intellectual capacity.

Now I, for one, am not ready to advocate this radical departure on a large scale. But I should like to urge that a conference of deans of half a dozen medical schools and a couple of dozen liberal arts colleges might explore the possibilities in this direction. What the proposal amounts to is a recognition that the four years in college and the four years in medical school be considered as a total educational unit and that the individual student be guided through these eight years by advice from both the college and the medical school authorities working together.

If such a conference of college and medical school authorities could be convened for a discussion of this problem, there are one or two other less radical suggestions I should like to urge for consideration. First, I should like a subcommittee of biochemists from the medical faculty and chemists from the college to try to formulate some more concrete outline of the minimum requirements. Similarly, the anatomists and the physiologists on the one hand and the biologists on the other might come together. I am not afraid of too narrow a premedical course nor am I afraid that the medical schools would dictate to the colleges. I believe cooperation is much to be preferred to the present highly unsatisfactory exchange of mutual recriminations.

Finally, I should like to urge upon the medical school faculties a serious consideration of ways and means of insuring that the future doctor may not only really receive the rudiments of a liberal education in college but be inspired to continue his liberal education throughout his professional course. To make any such proposal effective is difficult in the extreme. It can be done only if the medical school professors are willing to pay more than lip service to the ideals of a liberal education. Even four years in college devoted entirely to languages, literature, history, philosophy and the social sciences is too short a time to provide a truly liberal education. It is essential, it seems to me, to develop a sympathetic point of view in the medical schools toward a continuation of a student's education in something besides medicine. If the colleges will cooperate with the medical schools in guiding the student through the four years before he enters the medical school, will the medical schools in turn try to pay some attention to keeping alive the liberal arts tradition in the student's mind while he is studying medicine? Perhaps the history of medicine would provide in some instances the central core around which a continuation of liberal studies could be continued in a medical school. For others a discussion of the problems of socialization of medicine might furnish a basis for interest in something outside of medical work. Above all, if doctors could be made to acquire the habit of reading something other than scientific or professional literature on the one hand, or trash on the other, much of the complaint about the narrowly trained specialist would disappear. For the capable student who can work quickly there is time enough I feel sure. But the motivating force toward a liberal education is totally lacking in most of our professional schools today.

In short, I am advocating this morning a consideration by medical school and college authorities, acting together, of the scientific, professional and liberal education of the future doctor. I am suggesting that we try discarding the old concept of four years of scientific and liberal education followed by four years of professional training. In place of this we might regard the whole eight years as a unit with the aim of providing a balanced intellectual diet suited to each student's talents and interests in the hope that we might thus reach our goal of turning out both a well trained doctor and an educated man.

THE ORGANIZATION AND SUBJECT MATTER OF GENERAL EDUCATION

ROBERT M. HUTCHINS, LL.D.
President, University of Chicago
CHICAGO

Since you have two other college presidents on the program to tell you about college education it is obvious that you do not expect from any one of them the answer to your questions about it. You believe, like the rest of the world, that all presidents are liars, and you hope from a study of the differing lies of the three of us to discover the truth for yourselves. Speaking for myself, I find Mr. Conant's lies very persuasive, so much so that I shall drop out of this paper as I go along any lies of my own that are in conflict with his.

I assume that we are all agreed on the purpose of general education and that we want to confine our discussion to its organization and subject matter. I believe that general education should be given as soon as possible, that is, as soon as the student has the tools and the maturity it requires. I think that the program I favor can be experienced with profit by juniors in high school. I therefore propose beginning general education at about the beginning of the junior year in high school. Since I abhor the credit system and wish to mark intellectual progress by examinations taken when the student is ready to take them, I shall have no difficulty in admitting younger students to the program if they are ready for it and excluding juniors if they are not.

The course of study that I shall propose is rigorous and prolonged. I think, however, that the ordinary student can complete it in four years. By the ingenious device I have already suggested I shall be able to graduate some students earlier and some later, depending on the ability and industry that they display.

General education should, then, absorb the attention of students between the ages of 15 or 16 and 19 or 20. This is the case in every country of the world but ours. It is the case in some eight or nine places in the United States. Where the high school and the junior college are part of a large city school system, the organization

Read before the Thirty-Fifth Annual Congress on Medical Education and Licensure, Chicago, Feb. 13, 1939.

has been successful. Where, as at the University of Chicago and Stephens College, the institution has either a small high school or none at all, the insignificant size of the first two years of the program and the large size of the last two create great difficulties. If you have seventy students entering the four year unit at the junior year in high school and 700 entering at the freshman year in college, it is absurd to talk about a coherent four year program. You must have a curriculum that the 700 can enter in the middle without being handicapped because they did not enter at the beginning.

If in such institutions as my own the scheme I advocate is to succeed, we shall have to convince local parents, at least, that it is wise for them to send their children to us two years earlier than they have been accustomed to sending them. I think that if parents cannot be persuaded to do this the University of Chicago should abandon collegiate work altogether and give up its freshman and sophomore years. Those years at present are a foreign body in the otherwise admirable constitution of the university. The students in them have different ambitions from those in the divisions above; the teachers have different ambitions, too. But if ties cannot be found for these two years above they must be found below; for I do not believe that two years at any level is long enough to provide an adequate education. It is suggestive that two year units do not exist anywhere else in the world; they are known only in the United States.

I may mention at this point one aspect of the organization of general education which ought to be trivial but in this country is most important. I favor awarding the bachelor's degree in recognition of general education; I favor awarding it at about the end of the sophomore year. This suggestion is not so startling as many people seem to think. President Butler of Columbia advocated it in his annual report for the year 1901-1902. In France the *baccalaureat* is used to indicate the satisfactory completion of general education. The reasons for giving it the same significance here are first that it now has no significance at all. The bachelor's degree means four years in college. As the president of Hiram has lately said, "To most college 'students' who sit long enough and patiently enough and docilely give back a modicum of the wisdom that has flowed past their ears, there will come in time the reward of their long-sitting, sheepskins to cover their intellectual nakedness. . . . The usual requirements for graduation, 'a minimum of 120 hours with additional credit for physical education,' may represent little more than hours of painful but patient sitting. Their blood relationship to achievement is so far removed as to make the claimed relationship laughable."

But it is not only the credit system and the examination-by-the-teacher-who-taught-the-course system that make the B.A. certify merely to four years of sitting. It is also and I think principally the fact that the standard four year college of liberal arts is and must be concerned with both general and specialized education. Even in some of the oldest and most conservative of these colleges you will find that the student may indulge in extreme specialization at an early stage. Yet the preparation with which students enter these colleges is such that the colleges must also give them a general education. These two aims can only confuse the colleges and hence confuse the significance of the degree that they offer.

Columbia, Johns Hopkins, Chicago and several other places have attempted to meet this situation by dividing the first two years from the last two. Some institutions have even given them different staffs and administrations. Here we face again the problems raised by two year units. The first two years is not long enough for general education; the last two is not long enough for advanced study. The remedy would seem to be a four year unit beginning with the junior year in high school and leading to the bachelor's degree, and after that a three year unit beginning with the junior year in college and leading to the master's degree. The bachelor's degree would then indicate an adequate general education and the master's an adequate experience in advanced study. This master's degree should also indicate that the holder is qualified for a teaching position in which research is not expected or required.

The last two years of the present college of liberal arts is left stranded when the college is divided into upper and lower divisions. We have found at Chicago that one of our more difficult problems is how to provide any intelligible plan of advanced study in the junior and senior year. Some of our departments have succeeded in persuading students to plan their courses beginning with the junior year for three years to the master's degree. These departments have been able to effect notable improvements in both the general cultivation and the specific training of their graduates. I recommend the award of the bachelor's degree at the end of the period of general education, that is at about the end of the sophomore year, for the sake of advanced study as much as for the sake of general education.

It may be objected that many students will not want to add a year to their program of advanced study. This in my view is an argument for the plan. The educational system will be compelled to accommodate the youth of the nation up to the end of the junior college, that is, to about 19 or 20. There is no reason why it should accommodate them after that. Beginning with the junior year, education should be limited to those who are able and willing to profit by it. We should rigorously select our students at the university level, by which I mean the beginning of the junior year. Since, therefore, many students should terminate their education at the end of the sophomore year, one problem is how to induce them to do so. I think they will stay on and, through sheer importunity, get themselves a degree unless they can receive some recognizable and popular insignia at the end of the sophomore year. The bachelor's degree is recognizable and popular. Since it serves no useful purpose at present, I believe it should be made to serve the very useful one of persuading students to get out of education who should not be permitted to remain in it.

If general education is to be given between the beginning of the junior year in high school and the end of the sophomore year in college and if the bachelor's degree is to signify the completion of it, the next question is what is the subject matter that we should expect the student to master in this period to qualify for this degree?

Now I do not hold that general education should be limited to the classics of Greece and Rome. I do not believe that it is possible or desirable to insist that all students who should have a general education must study Greek and Latin. I do hold that tradition is important in education; that the primary purpose of education, indeed, is to help the student understand the

intellectual tradition in which he lives. I do not see how he can reach this understanding unless he understands the great books of the western world, beginning with Homer and coming down to our own day. If anybody can suggest a better method of accomplishing the purpose, I shall gladly embrace him and it.

Nor do I hold that the spirit, the philosophy, the technology or the theology of the Middle Ages is important in general education. I have no desire to return to this period any more than I wish to revert to antiquity. Some books written in the Middle Ages seem to me of some consequence to mankind. Most Ph.D.'s have never heard of them. I should like to have all students read some of them. Moreover, medieval scholars did have one insight; they saw that in order to read books you had to know how to do it. They developed the technics of grammar, rhetoric and logic as methods of reading, understanding and talking about things intelligently and intelligibly. I think it cannot be denied that our students in the highest reaches of the university are wofully deficient in all these abilities today. They cannot read, write, speak or think. I do not suggest that we should attempt to introduce the trivium and quadrivium into the American college. I do say that we must try to do for our own students what the seven liberal arts did for the medieval youth. If the Middle Ages have any suggestions to make on this point, we should welcome them. We need all the help we can get.

I should like to remark in passing that in the Middle Ages people went to universities at 13 or 14. They read books and experienced disciplines that are regarded as far too difficult for university professors today. Most of the great books of the western world were written for laymen. Many of them were written for very young laymen. Nothing reveals so clearly the indolence and inertia into which we have fallen as the steady decline in the number of these books read in our schools and colleges and the steady elimination of instruction in the disciplines through which they may be understood. And all this has gone on in the sacred name of liberalizing the curriculum.

The curriculum I favor is not too difficult even for very ordinary American students. It is difficult for the professors but not for the students. And the younger the students are the better they like the books, because they are not old enough to know that the books are too hard for them to read. Something like the course of study I should favor is now in force at St. John's College, Maryland. There an unselected group of indifferently prepared students are studying these books with tremendous enthusiasm thirty-five hours a week. They read last fall ten dialogues of Plato and voted to have extra classes so that they might read and discuss the rest of them. In connection with the reading, they are going through a formidable course of instruction in grammar, rhetoric, logic and mathematics.

The entire freshman class at Columbia is now reading and discussing twenty-five of the great books in philosophy and literature. I understand that Rushing Week at Columbia was a failure because the students were too interested in the reading to be interested in fraternities, that the books are the chief subject of discussion at all informal student gatherings, and that the only complaint comes from teachers in other courses who feel that their work is suffering from the excitement the books in the Humanities course arouse. For eight years and more I have taught these books to unselected pupils in our University High School and to freshmen, sophomores, juniors and seniors in college. Not one of them has suggested that the books were too hard or that they were not worth reading. I can testify from this experience, though not, of course, very scientifically, that students who can read anything thrive on these books and that the younger they are the more they thrive.

Those who think that this is a barren, arid program, remote from real life and devoid of contemporary interest have either never read the books or do not know how to teach. Or perhaps they have merely forgotten their youth. These books contain what the race regards as the permanent, abiding contributions its intellect and imagination have made. They deal with fundamental questions. It is a mistake to suppose that young people are interested only in football, the dramatic association and the student newspaper. I think it could be proved that these activities have grown to their present overwhelming importance in proportion as the curriculum has been denatured. Students resort to the extracurriculum because the curriculum is stupid. Young people are interested in fundamental questions. They are interested in great minds and great works of art. They are, of course, interested in the bearing of these works on the problems of the world today. It is, therefore, impossible to keep out of the discussion, even if the teacher were so fossilized as to want to, the consideration of current events. But these events then take on meaning; the points of difference and the points of similarity between then and now can be presented. Think what a mine of references to what is now going on in the world is Plato's Republic or Mill's Essay on Liberty. If I had to prescribe an exclusive diet for young Americans, I should rather have them read books like these than gain their political, economic and social orientation by listening to the best radio commentators or absorbing the New York *Times*. Fortunately we do not have to make the choice; they can read the books and listen to the commentators and absorb the New York *Times* too. I repeat: these important agencies of instruction—the radio and the newspaper—and all other experiences of life, as a matter of fact—take on intelligibility as the student comes to understand the tradition in which he lives. Though we have made great advances in technology, so that the steam turbine of last year may not be of much value in understanding the steam turbine of 1939, we must remember that the fundamental questions today are those with which the Greeks were concerned; and the reason is that human nature has not changed. The answers that the Greeks gave are still the answers with which we must begin if we hope to give the right answer today. The answers they gave have affected human history so profoundly that we cannot approach the issue of the purpose of the state, for example, without unconsciously reflecting their views. We may apply to these early thinkers the words of Cardinal Newman about Aristotle: "Do not suppose, that in thus appealing to the ancients, I am throwing back the world two thousand years, and fettering philosophy with the reasonings of paganism. While the world lasts, will Aristotle's doctrine on these matters last, for he is the oracle of nature and of truth. While we are men, we cannot help, to a great extent, being Aristotelians, for the great Master does but analyze the thoughts, feelings, views, and opinions of human kind. He has told us the meaning of our own words and ideas, before we were born. In many subject-matters,

to think correctly, is to think like Aristotle; and we are his disciples whether we will or no, though we may not know it." Do not suppose that in thus including the ancients in my course of study I am excluding the moderns. I do not need to make a case for the moderns. I do apparently need to remind you that the works of the ancients lie at the foundation of the tradition in which we live.

Do not suppose, either, that because I have used as examples the great books in literature, philosophy and the social sciences I am ignoring natural science. The great works in natural science and the great experiments must be a part and an important part of general education. Here again I am not concerned with the method; I am concerned with the end. The student should understand the leading ideas in the natural sciences. Do you think he does today? On the contrary, what he gets today is either a superficial shower from a survey course or professional instruction from the first day of the freshman year, based apparently on the notion that every member of the class is going to be a chemical engineer. General education is not professional education. The curriculum must be designed to prepare the student for intelligent citizenship. The type of scientific instruction that I received in college has no place in the kind of college I am proposing. As for survey courses of the usual variety, they have no place there either. They degenerate too easily into a rapid tour of all the facts known in physics, chemistry and biology. The basis of the scientific program should be the great landmarks of scientific work, the books and the experiments.

Neither at Columbia nor at Chicago has anybody interested in the kind of curriculum I am suggesting had the facilities for the kind of scientific instruction we have wanted to give. At St. John's College those facilities are available and are now being used. It appears that between a half and a third of the course of study will be mathematics and natural science. In fact, St. John's is the only college in the country in which every student must take laboratory science for four years.

Another problem that has disturbed those who have discussed this issue is what books I am going to select to cram down the throats of the young. The answer is that if any reasonably intelligent person will conscientiously try to list the hundred most important books that have ever been written I will accept his list. I feel safe in doing this because (*a*) the books would all be worth reading and (*b*) his list would be almost the same as mine. There is, in fact, startling unanimity about what the good books are. The real question is whether they have any place in education. The suggestion that nobody knows what books to select is put forward as an alibi by those who have never read any that would be on anybody's list.

Only one criticism of this program has been made which has seemed to me on the level. That is that students who cannot learn through books will not be able to learn through the course of study that I propose. This, of course, is true. It is what might be called a self-evident proposition. I suggest, however, that we employ this curriculum for students who can be taught to read and that we continue our efforts to discover methods of teaching the rest of the youthful population how to do it. The undisputed fact that some students cannot read any books should not prevent us from giving those who can read *some* the chance to read the best there are.

I could go on here indefinitely discussing the details of this program and the details of the attacks that have been made on it. But these would be details. The real question is Which side are you on? If you believe that the aim of general education is to teach students to make money; if you believe that the educational system should mirror the chaos of the world; if you think that we have nothing to learn from the past; if you think that the way to prepare students for life is to put them through little fake experiences inside or outside the classroom; if you think that education is information; if you believe that the whims of children should determine what they should study, then I am afraid we can never agree. If, however, you believe that education should train students to think so that they may act intelligently when they face new situations; if you regard it as important for them to understand the tradition in which they live; if you feel that the present educational program leaves something to be desired because of its "progressivism," utilitarianism and diffusion; if you want to open up to the youth of America the treasures of the thought, imagination, and accomplishment of the past, then we can agree, for I shall gladly accept any course of study that will take us even a little way along this road.

REFRESHER COURSES IN CLINICAL PEDIATRICS

AN EXPERIENCE IN POSTGRADUATE EDUCATION

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SAN FRANCISCO

Two fundamental pedagogic methods have guided all attempts at postgraduate medical education. Information developed at medical centers must be taken to the practitioner or the practitioner must be brought to the medical center for organized teaching in the medical specialties. For various reasons both methods have met with only moderate and in many cases no success. The reasons for this are (1) the expense of organization of postgraduate medical courses at the medical centers for the few physicians who are able to get away from their practice, (2) the expense to the physician student of remaining away from his practice for from four to six weeks and (3) in the bringing of medical school teachers to the practicing physician, the lack of understanding by the academician of the problems which confront the general practitioner. Because these methods of instruction are markedly different from those used for undergraduate medical students, many mistakes have been made in choosing teaching personnel. In other words, there has been a lack of experienced teaching personnel in this field. Finally, there has been lethargy on the part of the medical profession in recognizing the needs and benefits (value) of adequate postgraduate medical education.

With the passage of the Social Security Act in 1935, adequate funds became available for the first time to supply postgraduate teaching to the physicians of the United States. At the end of the fiscal year 1936-1937 (June 30, 1937) postgraduate training was provided with child and maternal health funds for local practicing physicians and dentists in thirty-four states. Of these states twenty-two reported a total enrolment of

From the Utah State Board of Health and the Curricula of Public Heath and Department of Pediatrics of the University of California Medical School.

6,193 physicians in obstetrics and nineteen an enrolment of 5,009 physicians for courses in obstetrics.

It is now time to analyze the methodology in this teaching and to attempt to benefit by the experience of those who have been engaged in the work. It is my purpose in this paper to describe an experience in public health teaching which was conceived and carried out as an experiment in postgraduate education. The results are still somewhat intangible, but it is hoped that in a follow-up report some member or members of the Utah State Board of Health will write a critical analysis from their point of view. This may indicate what plan of approach was best in order that such a course may be more successfully repeated.

ORGANIZATION OF THE UTAH STATE BOARD OF HEALTH TO ADMINISTER MATERNAL AND CHILD HEALTH SERVICES

The state of Utah is essentially rural. The total population in 1930 was 507,847.[1] Of the twenty-nine counties all but five have a population density under ten persons per square mile.

There are 508 physicians in the state, with the number of persons per physician ranging from 719 in Salt Lake County to 2,703 in Tooele County. Under the state board of health the local health regulations are administered under the district plan. The state is divided into five health districts and one full time county health unit. Each district is administered by a full time health officer holding a certificate in public health.

The division of maternal and child health is administered from the state office by a director. A supervising nurse in this division administers the public health nursing program, working with the supervisors in each district and the public health nurses under a generalized nursing plan.

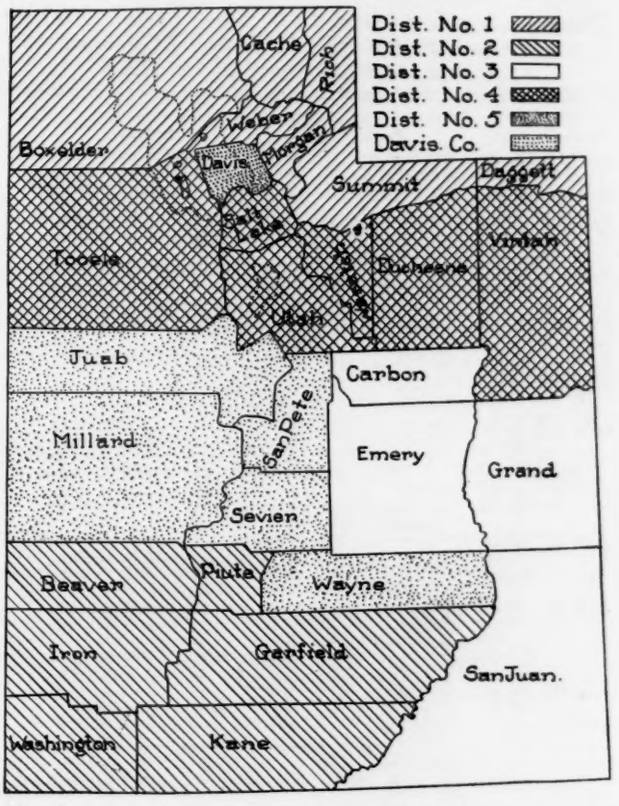
A nutritionist and an adviser on school health education are employed under the division of maternal and child health. Briefly the program of this division is to give advisory and consultation service to all local health groups and agencies, particularly in rural sections and sections of greatest economic need; to employ local physicians to conduct well baby, preschool and health conferences; to promote immunization against the communicable diseases; to promote better nutrition and health education in the schools, and to correlate these integral parts of the program with the dental and the crippled children's program wherever this is possible.

The well baby and preschool conference and immunization program are conducted under the supervision of the district health officers and the director of the maternal and child health division of the Utah State Board of Health by qualified local physicians, certified by the component society and approved by the state board of health. The state board of health pays local physicians at the rate of $5 for the first hour and $2.50 for each subsequent hour, with a travel allowance of 10 cents a mile beyond 5 miles. About $19,000 was budgeted for this during the current fiscal year.

With this administratively sound program it soon became apparent that in many cases the local physicians were deficient in modern technics on the conduct of well baby conferences and factual information demanded by many parents. Consequently it was deemed advisable to conduct postgraduate courses in order to raise the general standard of these conferences, and in May 1938 I accepted an invitation from the Utah Board of Health to spend two months in that state with this purpose in mind. The following program was developed with the sanction of the state medical society.

METHODS USED IN POSTGRADUATE TEACHING

In each case the details of the program were left entirely in the hands of the district health officer, and he used the services of the consultant as he felt would best suit the component medical societies. These societies were advised that the time allotted to each district would be on the basis of the number of physicians in the district. Consequently two weeks was spent in each of districts 1, 4 and 5, with one week each allotted to districts 2 and 3. The wisdom of this division of time will be discussed later.



Public health districts of Utah in 1938.

There are three groups which the consulting physician meets in conducting postgraduate medical courses. The approach is quite different with each.

The Public.—This group is starved for accurate information concerning the scientific facts of maternal and child care. This is not so much the fault of the local physician as it is the result of fads and misinformation given to the public by their grandmothers and by lay magazines. Consequently education must be given; for example the details of adequate antepartum care and data as to the value of and time for immunization are frequently requested by parents. A common sense talk on child training and guidance is also in order. These are usually given at public meetings, and herein lies their greatest shortcoming. The information does not reach a sufficient number of people to make it worth while. The more intelligent people of the community are always present, but those who need it most are invariably absent. Several public meetings of this type were held in all but one district. They were attended by from fifty to 250 mothers, grandmothers and teachers and a few fathers. The talks given became standardized

1. Houston, D. C., and Hill, R. M.: Heath Conditions and Facilities in Utah, Utah State Planning Board, April 1936.

to include an introduction aimed at showing the need for cooperation with the district health officer and the scope of the general public health movement. This gave an opportunity to include in a subtle way such information as the need for antepartum Wassermann tests and venereal disease control in general. Infant feeding, including solid food additions and the need of and time for immunizations were discussed, and recent advances in these fields were outlined. Finally, about fifteen minutes was devoted to habit formation and child guidance work. This part of the talk invariably precipitated a number of interesting questions for further discussion. It was my feeling that this method was a very strenuous one for the consultant to repeat in each town, considering the relatively few people reached.

TABLE 1.—*Sample Schedule for Dr. Amos Christie, Assistant Professor of Pediatrics, University of California Medical School, in Health District No. 4*

July 11-July 23, 1938

Date	Time	Place	Service
July 11	a. m.	Santaquin	Consultation with physicians
	p. m.	Vernal	
July 12	a. m.	Maeser	Infant and preschool conference
	p. m.	Vernal	Consultation with physicians
July 13	a. m.	Mount Emmons	Infant and preschool conference
	p. m.	Roosevelt	Consultation with physicians
		Fort Duchesne	
July 14	a. m.	Upalco	Infant and preschool conference
	p. m.	Whiterocks	Consultation with physicians
			Return to Provo
July 15	a. m.	Provo	Consultant, crippled children's diagnostic clinic
July 15	p. m.	Provo	Consultant crippled children's diagnostic clinic
July 16	a. m.	Provo	Office administration
	p. m.	Provo	Office administration
July 18	a. m.	Provo	Consultation with physicians
	p. m.	Provo	Consultation with physicians
			Meeting of Utah County Medical Society and registered nurses
July 19	a. m.	Provo	Consultation with physicians
	p. m.	Pleasant Grove	Consultation with physicians
		American Fork	
July 20	a. m.	Provo	Office
	p. m.	Provo	Consultation with physicians
	Evening		Pediatric clinic with Utah County Medical Society
July 21	a. m.	Provo	Consultation with physicians
	p. m.	Lehi and	Consultation with physicians
		American Fork	
	Evening		Public meeting sponsored by Utah County Medical Auxiliary
July 22	a. m.	Provo	Office
	p. m.	Provo	District nurses' conference
July 23	a. m.	Provo	District nurses' conference

The radio should offer, whenever available, a means of getting the required information to more people. Its shortcomings, however, are obvious to all who listen to it. For programs to be effective the script must be professionally prepared, and such service is usually not obtainable.

This medium, however, was tried in a district where a small radio station had an outlet of a possible 27,000 listeners. A time (from 5 to 5:30 p. m.) was arranged, and two half hour broadcasts were given. The subjects were "Diet and Growth in the Young Infant" and "The Premature Infant." The scripts were prepared with the idea of the listener's interest, and after each ten or twelve minutes a woman's voice was interjected to ask specific leading questions. In this way detailed information as to additions of solid food and the need and reason for cod liver oil, for example, were covered. The same voice, impersonating a typical mother, also asked pointed questions and was answered in conversational style concerning the prophylaxis of communicable diseases.

This method would seem more logical than the public meeting for reaching the public and would allow the physician more time for contact with the local physicians.

The Physician.—Three methods were used in reaching the medical profession: (1) the personal visit to the physician's office, (2) meetings of the component medical societies, at which clinics were held and talks given, and (3) attendance, on invitation, by from two to four physicians at a properly conducted well baby conference. The third method was most difficult, yet successful.

It is problematic which of the three methods can be used to the greatest advantage and which should precede the other. If a satisfactory meeting with good attendance can be arranged with the county medical society, this offers the greatest possibility of results because all further teaching methods to be used are dependent on the initial contact. The consultant must give a tactful and sincere presentation of what he is attempting to accomplish. It must be followed by a talk (not a lecture) on one of several subjects of practical value to the practitioner. I myself have discussed such subjects as recent advances in sulfanilamide therapy and some aspects of congenital syphilis. These subjects were of topical interest at the time and of definite value to the practitioner. The latter subject also allows for the opening of a discussion of adequate antepartum care.

In one county such a didactic talk was followed by a clinic. This included the presentation in academic style of from five to seven cases which were of diagnostic, prognostic and therapeutic interest. With overemphasis on suggestions of practical value, the way is open for pleasant and adequate contact with physicians in their own offices.

Office visiting is generally unsuccessful unless the practitioner has spent some time and thought preparing for the interview. Frequently he does not realize his problems or is reluctant to reveal his apparent inadequacy in a discussion of recent advances. The most subtle methods must frequently be used to draw him out. This was accomplished in some cases by an informed third person asking leading questions.

These personal interviews are of great value to physicians, and, if the physicians can be encouraged to ask their problem patients to come to the office for consultation, much teaching can be accomplished in an hour and a half or two hours. The consultant should be prepared to visit the homes of the patients, and a diagnostic bag is a minimum requirement.

There is a small group of older physicians who desire to show their complete ability to handle all problems pertaining to the diseases of men, women and children and who do most of the talking. No method was found to combat this type of individualism, and I am convinced that only a successful contact or repeated visits in a meeting of such a physician's colleagues will engender the necessary feeling of cooperation for a successful follow-up. It cannot be too firmly emphasized that in all relations with fellow practitioners the entire tone of the meeting or personal interview should be so conversational as to break down any prejudice against the visiting professor, whose ideas might be too unpractical and academic to be of use to the practitioner. Material must be presented with the attitude of "here it is if you can use it."

It should be remembered that the primary purpose in Utah was to raise the standards of well baby conference work, for which state and federal funds were being spent liberally.

Most practicing physicians who have been out of medical school more than ten years do not realize the tremendous educational value to the mother of this type of conference and have not kept up with the demands on the part of parents to know the fundamentals of habit training or the striking clinical points, such as rickets and anemia, which the physician should observe in such an examination. The conduct of the well baby examination is unique, and yet it is only with considerable difficulty and tact that it is possible to make the older physician receptive to this type of demonstration. Care should be taken in such teaching not to have too many cases. From eight to ten are sufficient for a two and a half hour clinic, and when they are carefully chosen by the public health nurses much can be accomplished. The importance of history taking, the value of reemphasis to the mothers and the fundamentals of infant feeding and solid food additions may be brought out. The value of prophylaxis against communicable diseases must be emphasized, and mothers should be encouraged to discuss their children's habit problems.

It is my feeling that herein lies the major value of the well baby conference and that an excellent bit of teaching can be given by efficient demonstration. The smile of satisfaction on the part of the mother whose questions have been adequately answered and whose baby has been completely examined will be sufficient evidence that the well baby conference to be successful must be more than a baby show or a weighing by the nurses. It must be conducted by a physician qualified to interpret disease at its outset and capable of making an examination sufficiently complete to promote confidence. He must be able to handle questions the answers to which are in any government bulletin on infant care or child management and are not the magic of pediatricians only.

The Public Health Personnel.—Factual information given to the health officers and public health nurses can be of considerable value to them in their future contacts with the medical profession. Therefore an association of the consultant with the public health officer is of importance in refresher courses on recent advances in maternal and child health, bringing communicable disease control and immunization methods up to date. There is no place in rural health work for the "arm chair health officer." The best health officer is first a good doctor and then a health administrator and educator. In other words, the health officer who will roll up his sleeves and use his training and knowledge of practical clinical problems to assist the practitioner will promote his program further and faster than the desk sitting type of health administrator. The schools for the training of rural health officers will do well to recognize this fact.

The district health officer and the public health nurse are the keystone of any program, and any association by them with the consultant is desirable. The health officer is the one to introduce the consultant to the physicians, as such an introduction should improve his future contact with them.

In each health district a nursing conference was called on the last day on which the consultant would be in that district. Discussions of local problems pertaining to the program were carried out openly and frankly, and considerable good work was done. At many of these joint meetings of public health personnel, social workers were invited and principals of schools attended. This presented an excellent opportunity for actual case studies to be shown. It was possible to demonstrate where better correlation of existing facilities would lead to greater efficiency in the broad program.

Two sample schedules made out by district health officers are shown in the accompanying tables. These were arranged through the cooperation of the secretaries of the medical societies and were circulated to all physicians. In this way any physician could participate in all or parts of the program.

THE EDUCATION OF THE CONSULTANT

It has been suggested that many mistakes have been made in postgraduate medical education by a teaching personnel untrained in the technics of teaching persons whose very choice of the medical profession spells "rugged individualism." It would therefore be unfair to omit in such an analysis as this a discussion of the ways in which my eyes were opened to the needs and local conditions confronting practitioners and rural health officers. It was possible to observe rural health

TABLE 2.—*Sample Schedule for Dr. Amos Christie, Assistant Professor of Pediatrics, University of California Medical School, in Health District No. 5*

Date	Town	Service
July 26	Nephi	Consultations with physicians
July 26	Mount Pleasant	Public address, 8 p. m.
July 27	Fairview	Consultations with physicians
July 27	Ephraim	Consultations with physicians
July 27	Manti	Consultations with physicians
July 28	Spring City	Infant conference, 9:30 a. m., relief society room
July 28	Mount Pleasant	Medical meeting, 8 p. m., Dr. Madsen's office
July 29	Gunnison	Infant conference, 10 a. m., town hall
July 29	Chester	Infant conference, 2 p. m., schoolhouse
July 29	Manti	Medical meeting, 8 p. m., schoolhouse
July 30	Salina	Consultations with physicians
August 1	Annabella	Infant conference, 10 a. m., relief society room
August 1	Venice	Infant conference, 2 p. m., church house
August 1	Richfield	Medical meeting, 8 p. m., Dr. Lowe's office
August 2	Bicknell	Infant conference, 10 a. m.
August 2	Soa	Infant conference, 2 p. m.
August 3	Scipio	Infant conference, 10 a. m.
August 3	Fillmore	Public address, 3 p. m., first ward church
August 4	Oak City	Infant conference, 10 a. m., church house
August 4	Hinckley	Infant conference, 2:30 p. m., grade school
August 5	Eureka	Infant conference, 10 a. m., school
August 5	Manti	Talk to welfare group, 2 p. m., court house

administrative problems which had been discussed in the classroom under actual test in the field. This practical experience should enable one to temper and even change many of one's theoretical ideas in the future. An example is my conviction that well baby conferences in rural communities must be open to all socio-economic groups. I am certain that there is no place in rural health work for well baby conferences limited to indigents.

Much was learned from rural practitioners in the way of clinical pediatrics. A notable instance was the experience of seeing eight patients with Rocky Mountain spotted fever. Colored photographs of rashes were obtained which will be of inestimable value for medical school teaching, and observations were made on the value and limitations of the vaccine prepared for this condition.

There was an opportunity to study the cause and clinical picture of pseudohypertrophic muscular disease, which seemed to have a high incidence in the state.

Other unusual educational opportunities presented themselves. Observations were made on the mottled tooth enamel due to the high fluoride content of the water of certain isolated areas in Utah. The seeming geographic and climatic incidence of rheumatic fever, previously described by Paul, was also noted. The high

incidence of thyroid enlargement in school children and of rickets in certain communities and the sharply localized areas of tremendous tonsillar hypertrophy were a constant source of interest and education.

A cooperative medical plan started in an isolated county whose people were without the services of a doctor for four years was observed in operation and studied with interest.

SUMMARY

Throughout these experiences in the postgraduate teaching field, the several approaches noted were evaluated with the idea of setting up a better program if it was to be repeated under somewhat similar circumstances in another community. Certain opinions were gained which should be of value in the repetition of an organized program in postgraduate medical education.

The practitioner has developed a tremendous responsibility to his patients. He cannot afford to leave his community for refresher courses for as long as two weeks. The people have learned to depend on him to a point where they will not accept a temporary locum tenens for even that short period. The practitioner feels this responsibility keenly and, despite any possible changes in the practice of medicine which may result from the changing times, this patient-doctor relationship must be preserved. It is for this reason that postgraduate medical education must be taken to the doctors.

I would suggest that this may best be done by a full time physician, whom I choose to call a circuit rider. This term has the connotation of the lawyer who pioneered the West, as did Abraham Lincoln in his day. A full time person, well trained in a branch of clinical medicine and serving for not longer than two years, could learn much to take back to his medical center and by reason of his academic training could keep the practitioners in the outlying districts well up on his subject. By traveling from place to place, by knowing local conditions and by possessing factual information and tact, he might be able to raise the standards of medical practice to a high degree. Herein may lie the future of postgraduate medical education.

There should be a well defined purpose before such a program is initiated, and this should be kept in mind at all times. If this purpose is to raise the standard of well baby conferences, all efforts should be directed to this purpose, at the sacrifice of lay education, nursing education or the solving of individual medical problems of the physicians.

The greatest need for postgraduate medical education or refresher courses in pediatrics is felt by men who have been away from medical school more than five years. More time must be allowed for those rural areas where it is impossible for the physicians to leave their practices for refresher courses.

This brings up the question of division of time, and a better arrangement should be sought than time per number of physicians in any one area. I would suggest that a short course of lectures does not reach the physicians who need the instruction most. Two weeks is insufficient for the accomplishment of anything constructive in any one area or district. One month or, preferably, two months should be the minimum requirement. I believe that the consultant should acquaint himself first with local conditions and the personalities peculiar to the area. In this way he can accomplish more, particularly if the available time is not spread too thinly over too wide an area.

Choosing the person who is to act as consultant or instructor is most important, and time, thought and energy should be expended on obtaining the best possible physician. In other words, for a well defined purpose a clinical instructor may be a better selection than a professor. Graying hair will stand in good stead for the consultant.

It is a well known fact that one of the great deficiencies in the training of health officers has been the lack of adequately trained teaching personnel with an understanding of postgraduate educational technics to give these men the real benefit of the progress in public health. It would be well to spend some of the available funds in the teaching of teaching personnel. I believe that the training of health officers for rural areas should be directed more along clinical lines. The promotion of a program is best accomplished by a health officer who, by reason of his knowledge of clinical medicine, can be of positive assistance to the practitioner in his clinical problems.

It would seem that the extension of education to the people has given rise to the national health movement. There is no evidence of an ebbing tide. It is my hope that this record of an experience in postgraduate education will stimulate further reports so that inadequacies may be realized and technics sought for remedying them.

THE COMMUNITY HOSPITAL

WHAT IT SHOULD BE

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In considering this subject—particularly at the present time when the question of great expansion of hospital facilities at governmental expense is under discussion—the matter of definitions appears of outstanding importance. Just what is meant by the term "hospital" and just what is a "community hospital"?

Is a hospital simply a building where the sick may be housed and presumably cared for by one or more members of the medical profession or is it, to be worthy of the name, far more than that?

In THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION of June 11, 1938, it was stated that in the entire United States there are "but thirteen counties no part of which is within thirty miles of a registered general hospital."[1] This statement presumably was intended as anticipatory evidence that the need for additional hospital facilities, as later set forth by the Technical Committee on Medical Care in Washington last July, was exaggerated, and the argument was buttressed at the very end by the statement "There may be some localities in which hospital facilities are needed. However, the Commonwealth Fund, which for the past ten years has been awarding hospitals to communities which seemed to be able to maintain such institutions with proper standards, has thus far made eleven awards." This statement is but a weak buttress for, while it is true that only eleven awards were made, the reasons were, first, financial limitations, each hospital, with nurses' home and equipment, costing the Commonwealth Fund on the average about $235,000; and, second, the fact that the staff of the Commonwealth

Read before the Thirty-Fifth Annual Congress on Medical Education and Licensure, Chicago, Feb. 13, 1939.

1. Distribution of Hospital Service, Current Comment, J. A. M. A. **110:** 2013 (June 11) 1938.

Fund's Division of Rural Hospitals, for a minimum period of five years and frequently for a longer time, has found it necessary to devote much time and attention to the establishment and maintenance of operating standards—matters with which the rural community is usually reasonably unfamiliar and which have some bearing on the importance of the definition of a hospital above referred to. Even the fact that a community "seemed to be able to maintain proper standards" is far from a guaranty that it will do so or even knows how. Certainly the fact that only eleven awards were made bears little relation to the need for additional rural hospitals or to the number of applications received, which have run into the hundreds.

Again, a "registered hospital," [2] says the American Medical Association, means one concerning which "evidence concerning irregular or unsafe practices . . . has not come to the attention of the Council on Medical Education and Hospitals." On this basis, 6,128 hospitals are on the latest registered list and 617 are omitted.[3] Members of the staff of the Commonwealth Fund have visited a good many registered hospitals which in our opinion are anything but assets to their communities and which in some cases are little if anything more than rather badly run boarding houses for the sick, with little and poor equipment and with questionable medical or surgical service. Many of these are very small; many are proprietary, sometimes operated by physicians of doubtful education and experience, in which some odd medical procedures are carried on.

Let me hasten to say that I am not indulging in that form of indoor sport, which is at present quite popular, of damning the American Medical Association. On the contrary, while it may perhaps be considered, with justice, somewhat overly conservative, it has among other valuable achievements done a great job in improving the standards of medical practice and of medical education, and in protecting the public. It has also done much of value in the hospital field, and since it can scarcely be expected to investigate on the ground every two-by-four establishment that chooses to call itself a hospital, perhaps we of the Commonwealth Fund staff and others familiar with hospitals are to blame for not calling "irregular and unsafe" practices to the attention of the Council on Medical Education and Hospitals; or, possibly a wiser policy would be to register only hospitals known to be regular and safe rather than those not known to be irregular and unsafe.

However, lest I still be misunderstood, let me turn momentarily to another side of the picture. Within the last few months an individual who is greatly interested in the hospitalization phase of the National Health Program proposed at the Washington Conference last July argued at some length, in conversation with me, for the establishment of very small (eight to twelve bed) hospitals—"crossroads hospitals," I believe this person called them—to be located in sparsely populated and very poor rural districts, to be "reasonably protected from fire" and equipped with a "moderate x-ray and simple laboratory." While in my judgment reasonable protection from fire is obtainable, when one is talking of hospitals, only by absolutely fireproof construction, and while I was not and am not particularly clear as to what a "moderate x-ray and simple laboratory" might be, nevertheless, admitting these points as possible for the sake of the argument, I inquired how in such a hospital, in such a community, it would be possible to supply the necessary medical and surgical service of really good quality, the technical service for the operation of the alleged x-ray and laboratory, satisfactory graduate nursing personnel, and the various other things which go to make up a hospital worthy of the name. To my complete astonishment the answer to this question was "All that is really needed is a good surgeon." Asked how such a good surgeon could be obtained in such a community where usually one is not likely to be found, the answer was that he could be imported. In my judgment, really good care for the patients in a hospital requires a number of other branches of medical service of high quality in addition to surgery. Nor does it seem to me likely in a community so sparsely settled and so poor in resources that no good surgeon has ever been attracted there, that one could be imported and persuaded to stay there even by a government subsidy, considering the opportunities for good surgeons in more pleasant regions. Again, the advocacy of such a plan for hospital expansion makes important the definition of a hospital.

A GOOD COMMUNITY HOSPITAL

If I may venture to say so, without being too obvious, it would seem to me that an adequate definition of a hospital which would render a worth while service to a given rural community involves two parts: the first relating to the building and its equipment, the second to the quality and type of service rendered within that building.

The building should be absolutely fireproof, whether large or small. It should be equipped not necessarily for every service which the best urban medical centers are prepared to render but certainly for every service which a reasonably competent medical profession is able to provide and without such equipment cannot provide satisfactorily. Such equipment should certainly include first-class clinical laboratory facilities, an x-ray plant adequate for diagnostic purposes, but not for therapy unless there is a physician trained to administer it, properly lighted, ventilated and equipped operating and delivery rooms, necessary facilities for the preparation of food including special diets, an adequate heating plant, reasonably comfortable wards and rooms—all these things to the extent that you are all familiar with—together with the best arrangements possible to emphasize what may be termed the safety factor, such as is provided by well separated operating and delivery rooms, isolation facilities for contagious cases, provision for prevention of cross infections, and so on. Certainly such conditions as have been recently related to me concerning a small "hospital" containing five patients in close proximity, three postpartum cases, one of scarlet fever and one of poliomyelitis do not make possible the type of provision indicated. One might add as a desirable if not essential quality such planning as will make for convenience in careful and orderly service, with absence of unnecessary noise and fatigue. The list could be enlarged.

Given such a plant, of what value will it be? That will depend entirely on the quality of those who are available to utilize the facilities and render the necessary service—the physicians and surgeons, the nurses, technical assistants for the x-ray and laboratory, even the cook.

Such a plant is largely useless without competent physicians, surgeons and other personnel. Nor can the best of physicians and surgeons serve their patients to good advantage without first-class facilities. Granted

2. Hospitals Registered by the American Medical Association, J. A. M. A. **110**: 986 (March 26) 1938.
3. Summary of Hospital Data, J. A. M. A. **110**: 959 (March 26) 1938.

that there are cases on record of difficult operations successfully performed on the kitchen table with the most primitive appliances, it is the successful ones, I suspect, that we hear about and not the failures—or the unnecessary deaths.

This, then, would be my definition of a hospital: a fireproof, properly equipped plant (whether small or large) with a medical staff and other personnel competent to render the service made possible by such a plant. With full realization that good hospitals vary somewhat in the degree of their excellence and that the competence of the physician is a relative matter, even so there is a minimum in terms of plant, equipment, medical staff and personnel below which a hospital ceases to be an asset and in my judgment becomes a liability—even a menace to the people of a community—and I fear that the descent below that minimum is far more common than is generally known.

If this definition is so far correct or even approximately so, it requires to be considered in determining the need for additional community hospitals and of how best to meet that need.

A community hospital is simply a general hospital which is prepared to serve the people of its community without regard to race, creed or financial status. It must be prepared to render a large amount of free service. Either a private voluntary hospital or a public, tax-supported one may render such service of high quality. Few proprietary hospitals render any great amount of free service or provide opportunities for hospital service to more than a small fraction of the physicians of the community; and few therefore can qualify as community hospitals. The Commonwealth Fund in its rural hospital program has devoted its attention to the type of hospital organized as a corporation not for profit, governed by an elected voluntary board and conducted by agreement in accordance with accepted standards. This is not to say that a public hospital cannot be operated as a community institution with equally high standards, provided—and this is not always easy—political control is avoided.

A community hospital of the type I have been attempting briefly to indicate should be of what size and serve how large an area? These two matters are somewhat interrelated. Such a hospital must make provision for patients of both sexes, of different races (certainly in the South), for different types of conditions which require to be separated. With the provision of such bed facilities and of the various types of equipment and of technical service, it has appeared from our experience that twenty-five beds is an irreducible minimum to provide what the various patients require and do it at reasonable expense. From forty to fifty beds has appeared a better minimum, permitting a wiser and more careful segregation of patients and a lower patient day cost. Nor does there appear any reason why such a hospital should not serve a population within a radius of 25 to 35 miles regardless of county lines. With the improvement of roads and transportation facilities that has, again in our experience, proved entirely practicable.

SPECIAL PROBLEMS

What then of the various sparsely settled and very poor areas—such for example as may be found in Catron County, New Mexico? This county, of some 7,000 square miles, had a population in 1930 of 3,283; in 1931 it had one physician. If such a hospital as I have described should be built there, how would it be staffed, how many occupants would it have? A circle of 35 miles radius in such a county would have a population of less than 400. Build a hospital as small as you like, run the cost of operation per patient as high as you like, still in such an area how can medical, nursing and other technical service of competent character be obtained and retained? I do not know the answer. Perhaps there is no satisfactory answer; perhaps it would be better for the patient to be taken long distances to a really good institution rather than to risk the poor quality of care which is frequently all that is available or can with practicability be made available in some very poor and sparsely settled districts.

The experience of the Commonwealth Fund would indicate, however, that there are many rural districts where a good community hospital of from forty to fifty beds could serve a reachable population group of sufficient size, where the nucleus at least of a satisfactory medical staff is available and other trained personnel are obtainable. We have assisted in providing such plants in eleven instances in almost as many states. We believe that they have been of great service and we know that many other similar districts are to be found.

In choosing the location for such hospitals it is important not only to avoid overlapping service areas and consequent unnecessary duplication of facilities but to relate the location of one hospital to that of others and so far as possible to key the community hospitals with the facilities of large urban medical centers and teaching centers. Such arrangements when practicable will create the possibility of informal affiliations, which contribute much in the way of consultant service, educational opportunity and the provision of skilled care for certain patients whom even a good community hospital may not be able to treat adequately. To hospitalize a given state will require careful study and planning if such advantages are to be secured.

I have been considering the hospital in this paper only as providing proper care for the sick. The value of a really good community hospital as a means and channel of education of physicians, nurses and of the public at large has not been dwelt on. In the hospitals with which the Commonwealth Fund has been concerned, the value of organization of the medical staff, of the contact and consultation between physicians, of regular staff meetings for discussion of cases and methods, of consultant pathologic service, of more formal medical institutes and clinical demonstrations, of postgraduate fellowships, of the constant interchange of ideas—these values I can only mention and refer you to a paper by Dr. Lester J. Evans,[4] medical associate of the Commonwealth Fund, read before this body a year ago. As Dr. Evans said, "Such a hospital makes its contribution to education simply by being the kind of hospital it is. In it the doctor finds opportunity for professional growth by learning from what he does and by hearing about what others do. The educational value of this experience is what the doctor makes it."

There is need for many more such hospitals in the United States. No hospital of lesser quality, in my judgment, is worth the having or worth the cost. And it is worth while to note and ponder the following statement by the Catholic Hospital Association:

> The Association is sympathetic with the plan of providing hospital facilities in those areas of the country in which such facilities are not found at the present time, or in which hospital facilities are relatively inaccessible. It cautions, however, against a precipitate and indiscriminating multiplication of hospitals

4. Evans, L. J.: The Rural Hospital, J. A. M. A. **110:** 945 (March 26) 1938.

and would recommend that the erection of new hospitals . . . be not stimulated except when a prudent prevision of the hospitals' operation and when, furthermore, an adequate staff, medical and administrative, can be provided, with due attention to both the economic and the professional viewpoint.[5]

Those words are in my judgment absolutely sound. Provision of adequate funds to erect, equip and operate community hospitals where they are needed, where they will be utilized, where they can be operated with reasonable economy and where adequate medical and other professional service is available is much to be desired. But intelligent planning, thoughtful foresight, wise administration, physicians of first quality, trained in modern medicine, and other trained personnel—these things are prerequisite to the successful expenditure of funds, large or small. No medical or health ideal, so far as hospitalization is concerned, is obtainable, nor is any measurable advance in that direction obtainable, in any other way.

THE RELATION OF ANESTHESIOLOGY TO MEDICAL EDUCATION

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This paper has been written to emphasize the need for undergraduate and graduate instruction in anesthesiology and to describe ways and means of its accomplishment.

Recent advances in medicine have widened the scope of anesthesiology to include problems which were only dreamed of twenty-five years ago. The insistence of patients on complete abolition of pain has made more prevalent the use of depressant drugs and the administration of such drugs in larger doses. There results a necessity for clinicians especially trained in the administration of pain-relieving drugs and the management of depressed states. For reasons too numerous to discuss fully here, the medical profession finds itself in the anomalous position of having an obvious lack of clinicians trained in anesthesiology and having scant provision for such training in our medical schools and hospitals.

OBJECTIONS

The following six arguments against clinical instruction are so frequently advanced as to warrant reference to them in some detail: 1. A sufficient number of physicians will not be interested. 2. Present day excellent instruction in the basic science departments makes clinical instruction in anesthesia superfluous. 3. "A little knowledge is a dangerous thing." 4. The medical school curriculum is already overcrowded. 5. The economic adjustments necessary for instruction and the employment of physicians specializing in anesthesia are impossible. 6. The administration of anesthetics is an art, not a science, and as such may be done quite as well by one without scientific training. Each of these six opinions is probably honestly held by some persons and should be honestly answered.

1. The impression that a sufficient number of physicians will not be available is erroneous. Young doctors will show interest in proportion to the inspiration which is imparted to them. The practice, so common at present in many of our medical schools, of delegating not only the technical administration of anesthetics but also the clinical teaching to persons without professional qualifications does not stimulate the interest or respect of the medical student and hospital intern. Conversely, it is noticeable that applications for residencies in anesthesia in hospitals come in higher proportion from Canada and from districts in this country where the administration of anesthetics is limited to graduates in medicine. In centers where professional training has become recognized, there is ample demand for positions. Furthermore, the professional and financial success of others in the specialty adds to its appeal. Recognition of the anesthesiologist as a specialist in certain phases of medicine and therefore as a valuable consultant to other departments adds to the attractiveness of the specialty. Such recognition has been withheld only because of improper teaching and lack of example.

2. The contention that all necessary instruction in anesthesia is provided by good courses in physiology, biochemistry and pharmacology can be based only on an entirely inadequate conception of the clinical importance and relationships of anesthesiology. Careful consideration will show that clinical interpretation and application of basic science knowledge is admittedly necessary in every other branch of medical education. Anesthesiology deserves no less clinical interpretation. It deals with the management of patients acutely depressed by drugs, with artificial respiration, resuscitation, the maintenance of free air passages, the administration of oxygen and other gases, and with the recognition of evidences of oxygen want and carbon dioxide excess, to mention but a few of its ramifications. Many circumstances of depression due to accident or illness bring about changes in the body similar to those accompanying anesthesia. In the medical or surgical wards, however, such disturbances take place over a period of hours or often days, whereas in the operating room they develop often in a matter of minutes and can be followed through cause, development and treatment in a single teaching period. Here then is the ideal place to teach these fundamentals to the student. In later practice, whether he becomes a specialist or a general practitioner, he will have daily use for this knowledge.

3. The dean of a great school has offered as an excuse for complete absence of clinical instruction in anesthesia from his curriculum the quotation "A little knowledge is a dangerous thing." This argument is quite as applicable to the clinical teaching of surgery or any other portion of medical practice. The argument has two obvious fallacies: 1. Lack of clinical teaching will not prevent graduates in medicine from considering themselves competent to deal with matters of anesthesia. Thus by its own standards the argument fails. The minimum of knowledge is already assumed by the medical graduate; therefore he is dangerous; therefore the school should amplify his knowledge as much as possible, at least to the extent of showing him his limitations. 2. The fundamentals of anesthesia are matters of everyday application in every branch of medical practice and therefore cannot be omitted. Training in anesthesiology will amplify a little knowledge gained in other departments and make the young graduate a safer rather than a more dangerous practi-

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5. Hospital Progress **19**: 387 (Nov.) 1938.

From the Department of Anesthesia, University of Wisconsin Medical School.
Read before the Thirty-Fifth Annual Congress on Medical Education and Licensure, Chicago, Feb. 14, 1939.

tioner. Whether students are to administer anesthetics or not, they should go out from medical school prepared at least to care for patients while they are subject to drug depression, sometimes induced by an overdose. Physicians must in all justice be possessed of sufficient knowledge of the clinical use of anesthesia to recognize the good from the bad. They should be able to save a life by reestablishing a patent airway or performing efficient and safe artificial respiration when necessary. That some recent graduates are dependent on the fire or police department or on their boy scout manuals for artificial respiration is a serious reflection on present day medical education.

4. That the curriculum is too crowded to include clinical anesthesiology is more apparent than real. Even without formal lecture periods the student, patient and anesthetist can constitute a teaching unit in ward or operating room. When the department was established at the University of Wisconsin twelve years ago there appeared to be no time available for lectures. However, the first year one hour was assigned, the next three hours and the year following six hours. With the present arrangement, to be described later, the curriculum seems no more crowded than twelve years ago. It is apparent therefore that, once the need is appreciated, available time will be found.

5. That no money is available for the establishment of a department of anesthesia on a professional basis may temporarily be true in some institutions. Medical progress modifies budgeting and may involve an added outlay for equipment, replacements and other changes. A well qualified director of anesthesia, who is capable of filling with credit the chair in the faculty of the medical school, should command an income comparable to that of other members of the staff. In the light of the increased scope of the service rendered, necessary budgetary adjustments are insignificant. In some institutions ill advised purchases, lack of attention to home construction of apparatus, and waste of materials have increased costs. With proper reorganization certain economies may result. The change has actually been made in some institutions with a definite financial saving within the first three year period.

6. There can be no question that the administration of anesthetic drugs is an art just as is the skilful handwork of the clever surgeon, but it is an art in the application of fundamental principles of basic science. The minute to minute necessity for the utilization of knowledge of physiology, of pharmacology, of biochemistry, of anatomy and even of physics is appreciated by every keen anesthetist. The rapidity with which changes may occur and the need for accurate thinking and prompt judgment are not exceeded elsewhere in medical practice. The trained anesthesiologist is a scientist applying scientific knowledge of respiration and circulation both in the operating room and in the wards. Art in anesthesia, to be safe for the patient, must be based on a scientific foundation quite as broad and fundamental as is the foundation for the art of surgery.

CONTRIBUTIONS TO GENERAL MEDICAL EDUCATION

Whatever type of practice they expect to pursue, young physicians must go out with sufficient knowledge of clinical anesthesia to recognize its limitations and its possibilities. Somewhere in the medical curriculum, students must be provided the opportunity to correlate the basic pharmacologic facts regarding depressant drugs with their clinical application. They must be taught the proper management in the wards of patients under the influence of such drugs. They must recognize the physiologic and biochemical disturbances which accompany the depression of respiration and circulation as well as have a knowledge of the measures and technics available to correct such disturbances. Such matters can be taught more effectively and more easily during the study and care of the surgical patient before, during and after anesthesia than at any other time.

A series of combined didactic lectures and clinical demonstrations on narcotized patients can be utilized for undergraduate teaching. A laboratory course in surgical technic can be utilized to emphasize the more fundamental principles and to permit experience in open drop technic. During a short period of the fourth year and of the internship the student may serve with the anesthesia department, gaining knowledge through discussion as well as practical experience.

Emphasis is laid on the side effects both of the drugs and of the technic. The principles on which depend the choice of sedative and narcotic drugs and their dosage are discussed, and their administration is demonstrated. Methods of maintaining patent air passages and the treatment of depression are practiced. Indications for and methods of administering pneumotherapy are demonstrated and discussed. Various supportive treatments of depression by rectal, subcutaneous and intravenous routes are discussed and technics of administration demonstrated. The causes and treatment of acute respiratory derangement accompanying and following anesthesia are discussed and demonstrated when possible. The physiologic principles of technic for obstetric pain relief and the physiologic and biochemical balance in the mother as an influence on the condition of the child at birth are stressed. During the administration of pain-relieving drugs to women in labor, the anesthetist has an ideal opportunity to impress on students the fundamental physiologic interrelationship between mother and fetus and the influence which he may exercise on the condition of the fetus by the judicious or injudicious administration of gases or other drugs to the mother. The physical state of patients before operation and their postoperative course in the light of the effects of drugs is studied and recorded by both the senior student and the intern. Such a course of supervised instruction and experience we believe essential in the general medical education of every young physician.

In anesthesiology, as in almost all phases of teaching, service and instruction go hand in hand. Consciously or unconsciously, the student imitates the instructor's service to others and emulates his success. Seeing the anesthetist approach patients with judicious recognition of the problems in medicine and psychology which they present, the student will realize the seriousness of assuming responsibility for the patient's life while administering drugs the therapeutic doses of which range from 65 to 90 per cent of the lethal doses. The student observes that the patient's welfare is the constant concern of the anesthetist and that by means of frequent observations and accurate detailed records the anesthetist can note minute to minute changes, can interpret and assess their significance, can adjust his own course accordingly and can consult with the surgeon should circumstances require a change in the planned procedure. If the student should become a surgeon, he will benefit by knowing to what extent he may rely on the cooperation and advice of the anesthetist

and to what extent he may feel free to attend to the operative procedure without being concerned about the anesthesia. If the anesthetist is qualified to assume complete responsibility for the general condition of the patient, the surgeon's attention may be devoted entirely to teaching and carrying out the surgical procedure, more time may be spent allowing the surgical neophyte to obtain some practice and the young surgeon may be permitted more safely to take the full responsibility for many surgical procedures.

SPECIALISTS

One can hardly start a discussion of the training now required to qualify as an anesthesiologist without first commenting on the debt the profession owes to the many self-taught specialists who have pioneered in this neglected field. Starting with the object of providing patient and surgeon with the best available conditions during operations, many physicians have, through years of service, coupled their extensive experience with a scientific attitude of observation and inquiry to build the practice of anesthesiology into the science it is today. They have contributed the numerous developments which now make intensive training almost obligatory before a younger man can call himself their equal. That these self-taught anesthesiologists still constitute the backbone of the specialty is evident from the fact that only three of the nine members appointed to the American Board of Anesthesiology have qualified by way of formal postgraduate training.

With the larger conception of anesthesia service coming to recognition at this time, it would seem that within a few years any hospital of 100 beds or more with an average proportion of surgical work will need the full time of at least one specialist in anesthesia to perform the various duties connected with a complete service. The qualifications of such a specialist should equal those necessary for certification by the American Board of Anesthesiology, an affiliate of the American Board of Surgery. To qualify for the examination of this board at present, a physician must be of good moral character, of ethical standing, a member of the American Medical Association, licensed by law to practice medicine, a graduate of a grade A medical school, a former hospital intern and a specialist of at least four years' standing, two years of which should have been spent in intensive graduate study. After 1941, in the opinion of the board, the special preparation should consist of six years' specialization, three of which should be spent in thorough training "in the clinical phases of anesthesiology and in anatomy, physiology, pharmacology, biochemistry and other basic sciences which are necessary to proper understanding of the problems involved in the specialty of anesthesiology." Such instruction must have been received in institutions approved by the Council on Medical Education and Hospitals.

The recent rapid increase in the number of institutions offering adequate training and the number and qualifications of the applicants are most encouraging. It may be asked what is to become of these physicians after they finish their training. Placing young specialists in the United States has so far not proved difficult. The demand on the part of medical schools and large teaching hospitals has exceeded the supply. Eventually a saturation point of teaching positions will of course be reached. However, several obvious circumstances will bring about satisfactory adjustments. Established departments tend to expand in scope, requiring an increasing number of associates and assistants. Many men are intensely interested in anesthesiology but not in teaching as a major interest or in research activities. Although they are quite as capable as the teachers, their preference is for private practice in hospitals without university affiliations. The minimum amount of instruction to the house staff necessary in such hospitals is given willingly by these men just as it is by attending staff members in other specialties. The fact that hundreds of physicians who had little or no formal training in anesthesiology, either graduate or undergraduate, have succeeded in such practice in the past proves that there will be abundant need for well trained practitioners in the future.

RESEARCH

It should be emphatically stressed that research is merely a by-product of a department of anesthesiology. First and foremost should come good service to patients, then teaching and finally, when these are assurred, research.

The physical signs induced by, the character of the response to, and the effective dose of anesthetic and depressant drugs are not the same with animals as with man, yet the laboratory is the logical starting point for any physiologic or pharmacologic investigation which may ultimately receive clinical study and final evaluation. Several recent advances in anesthesiology serve to emphasize that cooperative effort between the laboratory worker and the clinician is essential. In addition to purely clinical research, the anesthetist is capable of contributing much toward the satisfactory amalgamation of laboratory and clinical data through discussion of the planning of experiments involving anesthesia and cooperative assistance in the laboratory, aid in checking the results of animal experiments with human beings, offering to the basic science departments the opportunity for clinical observation of their problems, carrying clinical problems to the basic science experts for their consideration and investigation, and independent investigations. The control of the patient essential to proper anesthesia provides admirable circumstances for the study of changing bodily function incident to the anesthetized state.

TECHNICIANS

Surgeons have depended and still depend, to a constantly decreasing extent, on technicians for the administration of anesthetics. A reference to this situation is therefore necessary. The aid of the nursing profession has been priceless. The neglect by the medical profession of so important a function has thus been compensated to some extent. It is obvious, however, to one who has spent many years in training others in the technical as well as in the scientific aspects of pain relief that a more appropriate field for the nurse-technician in medicine is to be found in obstetrics and minor surgery, if indeed such technician assistance is necessary. True, one not possessed of a medical background can be taught to do many things in medical practice. However, the minute by minute need for knowledge and judgment in matters pharmacologic as well as physiologic is rarely so great in normal obstetrics and during certain surgical procedures as it is during the administration of a majority of anesthetics. Decisions during delivery of a parturient woman or during the removal of an appendix are seldom so likely to affect directly

the later incidence of morbidity or even mortality as are the decisions which must be made and acted on during the management of the anesthetized patient. If a technician must be used—and the present need in some localities is admitted—a physician well versed in anesthesiology should be constantly close at hand. The practice, current in some medical schools, of training nurses as anesthetic technicians and sending them out to administer anesthetics without supervision is perpetuating an unjustifiable hazard.

Our experience has taught us two important facts. 1. The employment of anesthesia technicians in a hospital seriously embarrasses the satisfactory training of medical students and doctors. 2. The average intern, after good training in the basic sciences and a half year of reliable undergraduate instruction in the clinical use of anesthesia, can, at the end of a month of carefully supervised practical experience in the operating room, be trusted with the welfare of an anesthetized patient more safely than can the average technician after years of experience. This statement is made advisedly and after long observation of persons working in both categories.

ESTABLISHMENT OF A DEPARTMENT

In what does a department of anesthesiology in a medical school consist? First and without doubt there must be a director, a physician who is the best possible clinical anesthetist as well as teacher. Progress will be more satisfactory if the director's time is devoted solely to one institution. His income should be adequate to maintain him on a par with the heads of other departments. Immediate need for assistants will depend on local circumstances and the size of the hospital. Once such a director is a part of the faculty and hospital staff, gradual development of a department in the hospital and in the school should take place. The basis of both teaching and research is good clinical anesthesia. The director's time during the first year therefore should be concerned mainly with learning the ways of the surgical staff and the staffs of other departments and fitting himself to supply their individual needs. During the director's second year, a short course of lectures and demonstrations to undergraduates can advantageously begin. If the curriculum is hopelessly crowded, possibly an hour can be offered here and there from some branch of surgery or from obstetrics. Gradually the need will become more apparent and the time will become available. As soon as possible, one or two fourth year students at a time should be assigned in rotation to clinical anesthesia. A student will learn more during one week full time than during three weeks part time. The same is true of interns. The longer the period of contact, the better will be the result. During the director's second year, residencies in anesthesia may be thought of, the number depending on the size of the hospital. Only after the clinical work is running smoothly, with the full confidence of the surgical staff, can undergraduate teaching, then graduate teaching and finally research be undertaken.

A SAMPLE DEPARTMENT

The department at the University of Wisconsin as constituted at present will be described, not because it approaches the ideal but because we are familiar with it. Organizations in existence for a shorter time are already more nearly ideal. Some of these have been initiated in hospitals connected with medical schools,[1] while others are in hospitals without teaching affiliations.[2]

This department may be outlined as follows:

A. Personnel
1. Professor of anesthesia in medical school and director of anesthesia, university hospitals; full time; salary from medical school and fee privileges for private patients
2. Instructor in anesthesia: former resident; salary from medical school
3. Research fellow: former resident; salary jointly from research fund and hospital. It is hoped to make two or three permanent associates in the future
4. From five to seven residents: duration of appointment three years; prerequisites M.D., rotating internship and preferably one year residency in internal medicine or two in general practice; stipend and maintenance similar to those of other departments
5. Interns; spend one month in the anesthesia service
6. Fourth year medical students; one week full time; fifty students in each class

B. Teaching
1. Undergraduate
   (*a*) One lecture, second year (courtesy of the pharmacology department)
   (*b*) Course in surgical technic and anesthesia (given to one half of the third year class each semester)
   Instructor and two residents supervise anesthesia and teach fundamentals of open drop ether and chloroform anesthesia with dogs
   Twenty three-hour laboratory periods a year
   (*c*) Sixteen lectures second semester of third year, one hour periods
   Demonstration-lecture usually with anesthetized patient; quiz
   (1) History, terminology and scope of anesthesiology
   Review of Fundamentals of Physiology
   (2) Circulation
   (3) Prophylaxis and treatment of circulatory disturbances
   (4) Respiration
   (5) Prophylaxis and treatment of respiratory disturbances
   (6) The autonomic nervous system
   Review of Fundamentals of Pharmacology
   (7) Nonvolatile agents and correctives
   (8) Gases and vapors (including fire hazard)
   Fundamentals of Technic
   (9) Oral, rectal, subcutaneous and intravenous technics
   (10) Open drop technic; signs of anesthesia
   (11) Carbon dioxide absorption technic
   (12) Other inhalation technics (partial rebreathing, etc.)
   (13) Physiology, pharmacology and technic of obstetric pain relief

1. References include:
Gatch, W. D.: Anesthesia in Curriculum and Clinic, J. A. M. A. **69:** 367 (Aug. 4) 1917.
Herb, Isabella: Anesthesia in Relation to Medical Schools and Hospitals, Am. J. Surg. **35:** 50 (April) 1921.
Bourne, W.: On the Teaching of Anesthesia to Medical Students, Brit. J. of Anaesth. **1:** 74 (No. 2) 1923.
Waters, R. M.: The Requirements of an Anesthesia Service, Anesth. & Analg. **9:** 219 (Sept.-Oct.) 1932.
Wright, A. M.: Teaching and Anesthesia Service from the Viewpoint of Surgery, ibid. **14:** 246 (Nov.-Dec.) 1935.
Rovenstine, E. A.: Anesthesia at Bellevue Hospital, Hospitals **10:** 84 (June) 1936.
Dollar, D. M.: The Teaching of Anesthesia, Anesth. & Analg. **15:** 225 (Sept.) 1936.

2. References include:
Salzer, M.: Anesthesia as a Part Time Specialty, Tr. Sect. Surg., Gen. & Abd., A. M. A., 1922, pp. 45-52.
Palmer, C. B.: Organization of a Hospital Anesthesia Department, Anesth. & Analg. **11:** 50 (April) 1923.
Miller, A. H.: Organization of the Anesthesia Service of the General Hospital, J. A. M. A. **101:** 1119 (Oct. 7) 1933.
Leech, B. C.: Organization and Management of a Department of Anesthesia in a 200 to 400 Bed Hospital, Anesth. & Analg. **13:** 192 (Sept.-Oct.) 1934.
Ruth, H. S.: Anesthesia Service, ibid. **14:** 243 (Nov.-Dec.) 1935.
Schwartz, A. L.: Professional Anesthesia: A Hospital Plan in Operation Eighteen Years, J. Indiana M. A. **29:** 165 (April) 1936.
Tovell, R. M.: The Department of Anesthesia, Hartford Hospital: A Report for 1937, Anesth. & Analg. **17:** 268 (Sept.-Oct.) 1938.

Fundamentals of Local and Block Anesthesia

(14) Pharmacology, principles, toxicity (prophylaxis and treatment)

(15) Block technics: emphasizing simple field blocks and spinal blocks

(16) Therapeutic and diagnostic procedures with anesthetic drugs

(*d*) Each fourth year student for one week full time with department; preoperative check of patients scheduled for operation; operating room work; postoperative check of patients; record keeping

2. Postgraduate

(*a*) Intern, twelve of house staff, one month each full time

(*b*) From five to seven residents, three year periods

First and third years, clinical anesthesia with some teaching experience and research

Second year, research major interest (anesthesia problems) with courtesy contact in laboratories of pharmacology or physiology, or clinical research

Trial being made of a limited number of six month appointments of graduates already practicing anesthesiology who wish a postgraduate course; not yet established; if adopted, tuition will have to be charged

(*c*) The department is open to visiting physicians at all times, though no clinical experience is offered such visitors

C. Departmental meetings

(*a*) Current literature review and discussion, two hour session, Monday 7 p. m.

One member reports each week on journals assigned to him; 106 journals covered, with occasional articles from others

A small departmental library maintained; medical school library near at hand

(*b*) Clinical work: Review of past week's cases, including deaths of surgical patients; two hour session, Wednesday, 1 p. m.

Meetings attended by whole anesthesia staff, including intern, student and visitors; chairmanship, in rotation, by residents

(*c*) First year residents required to attend all undergraduate lectures

(*d*) All members of the department expected to attend hospital staff meetings, including clinical-pathologic conferences and university medical meetings

Preoperative rounds are made each evening, when the clinical records of patients are reviewed and transferred to departmental record sheets; after the patients are seen, orders are written for premedication. Odd hours are utilized by residents and interns to examine records and patients after operation and to complete the anesthetic record. The record sheet is then coded to a Hollerith punch card for permanent filing. All records are sorted yearly and a statistical survey of the work of the department compiled. An effort is made to have each resident write at least one paper and gain experience in lecturing to medical students.

The review of basic science for the resident, aside from his attendance at undergraduate lectures, is accomplished in an entirely informal way. Frequent contact with a skeleton, models and charts in the department aids him in coordinating his knowledge of anatomy with the technic of injection anesthesia. Experimental blocks and dissection of the cadaver are made possible through the courtesy of the anatomy department. Joint research efforts are constantly in progress with the departments of physiology and pharmacology and other basic science groups as well as with the various departments of clinical practice. Constant reference to the literature is stimulated as a result of discussions in the operating room and at departmental meetings. This has seemed sufficient for all practical purposes.

A department of anesthesia must conform to the needs of the institution served. In the plan outlined, two permanent associates with an eventual rank of associate professor are essential for future development. The instructor should be retained on a semipermanent basis. Such a personnel is an essential if the short term (six months) instruction to graduates is instituted.

SUMMARY

By anesthesiology is meant not only the science of the administration of drugs for the comfort of patients during operation but also the management of patients in depression from other causes. Pneumotherapy, intravenous therapy, therapeutic and diagnostic procedures involving the use of anesthetic drugs, and other efforts based on similar scientific knowledge, logically fall within the scope of anesthesiology. Clinical instruction in this subject is sound educational policy in the broad training of every physician. The outline given of the establishment and conduct of such a department in a teaching hospital and medical school is not ideal but may afford a groundwork on which better organizations may be constructed in other medical schools and in the various hospitals. The patient under the influence of pain-relieving drugs, together with the department of anesthesia, constitutes a natural decussation of many of the pathways between basic science and clinical teaching. Appreciation of this relation is, we believe, a contribution to our educational program.

NOTE.—The references cover only the published accounts of established departments of anesthesia. There are many departments, especially of recent origin, which have not been described in the literature.

THE INTRAVENOUS USE OF SODIUM SULFAPYRIDINE

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The very slight solubility of sulfapyridine (2-[*p*-aminobenzene sulfonamide] pyridine) in water renders parenteral administration of this drug difficult when a route other than oral administration is desired. The poorer and more erratic absorption from the gastrointestinal tract of sulfapyridine as compared to sulfanilamide [1] necessitates its parenteral use in certain cases if high blood concentrations are to be attained. Sulfanilamide is sufficiently soluble to allow the use of subcutaneous administration of a saturated solution in physiologic solution of sodium chloride but in the case of sulfapyridine several liters of fluid would have to be given. Whitby [2] has suggested the injection of an oil suspension of sulfapyridine intramuscularly. There are objections to this procedure and even possible dangers.[3] The very soluble sodium salt of sulfapyridine recently described and studied by Marshall, Bratton and Litchfield [1] would appear to offer a means of parenteral administration of the drug.

This investigation has been aided by a grant from the John and Mary R. Markle Foundation and a grant from the Chemical Foundation, Inc., of New York.

From the Department of Pharmacology and Experimental Therapeutics and the Department of Medicine, Johns Hopkins University School of Medicine.

1. Marshall, E. K., Jr.; Bratton, A. C., and Litchfield, J. T.: Science **88:** 597 (Dec. 23) 1938. Long, P. H., and Feinstone, W. H.: Proc. Soc. Exper. Biol. & Med. **39:** 486, 1938.
2. Whitby, Lionel: Lancet **2:** 1095 (Nov. 12) 1938.
3. Long, P. H.: Lancet **1:** 60 (Jan. 7) 1939.

Since a solution of sodium sulfapyridine is strongly alkaline (p_H 10.4 to 11.0), the only possible route of parenteral administration is the intravenous one. The p_H of such a solution is somewhat higher than that of a sodium salt of a barbiturate [4] and lower than that of alkalinized arsphenamine,[5] but the total amount of alkali given at a dose would be greatest in the case of sodium sulfapyridine. With the experience of intravenous injection of barbiturates and arsphenamine as a background, it seemed proper to use sodium sulfapyridine intravenously as an emergency measure if animal experimentation on its acute toxicity by this route seemed to justify its clinical trial. Since any delayed toxic effects and chronic toxicity from the intravenous use of sodium sulfapyridine must obviously be identical with these effects produced by the same blood concentrations of sulfapyridine administered orally, we have investigated in animals only the acute toxicity of sodium sulfapyridine by intravenous injection. The following data are taken from an unpublished study of Marshall and Litchfield on certain aspects of the pharmacology of sulfapyridine.

TABLE 1.—*Toxicity of Sodium Sulfapyridine for Dogs*

Dog	Dose, Gm./Kg.	Per Cent Solution Injected	Blood Level Mg. per 100 Cc. 1 Hour After	Symptoms
A	0.1	10	10.0	None
B	0.1	5	11.1	Vomited once
B	0.1	10	11.3	Vomited once
B	0.1	20	10.9	None
C	0.1	20	17.1	None
D	0.1	20	9.7	None
E	0.1	5	10.5	None
F	0.2	10	24.2	Slight ataxia
C	0.2	10	20.8	Slight muscular twitching
G	0.2	10	22.3	Slight muscular twitching and ataxia
H	0.2	10	20.4	None
I	0.3	20	37.8	Vomiting, muscular tremor and convulsions
J	0.3	20	36.5	Vomiting, convulsions, muscular tremors
K	0.5	20	55.5	Vomiting, convulsions, died in 6-10 hours
L	0.5	20	60.6	Vomiting and convulsions
M	0.5	20	52.8	Vomiting and convulsions
N	0.5	20	58.8	Vomiting and convulsions
O	0.5	20	64.5	Vomiting and convulsions, died in 3 hours

In table 1 is given a summary of the experiments on dogs. The symptoms from an intravenous injection of a solution of the sodium salt are identical with those observed in mice and dogs by Marshall, Bratton and Litchfield [1] after oral administration of this drug. With the exception of slight vomiting in one animal, symptoms were not observed with 0.1 Gm. per kilogram; with 0.5 Gm. per kilogram severe symptoms and convulsions were always seen, and death occurred in two out of the five dogs injected with this dose. Neither the strength of the solution used nor the rate of injection seemed to influence the symptoms, except those seen during the first few minutes, when collapse occurred if the solution was given too rapidly. Blood concentrations [6] were done at intervals on all the animals, but those taken at about one hour (from forty-five to sixty minutes) after injection are given because at this time equilibrium between blood and tissues is certainly complete and maximum symptoms are seen. One can note the approximate proportionality between dose and blood concentration. In table 2 are summarized data on the intravenous injection of the sodium salt into rabbits. It is clear that rabbits, even on the basis of blood concentrations, are more resistant than dogs; this may be due to the fact that the rabbit acetylates sulfapyridine very rapidly and shows a more rapid fall in blood concentration with time than does the dog, which does not acetylate at all.

On account of the well known effects on circulation and respiration caused by the injection of insoluble organic acids which require a large amount of alkali for solution,[4] the effect of the injection of solutions of sodium sulfapyridine on the blood pressure and the respiration of anesthetized dogs was studied. Under light ether anesthesia, five dogs were given eleven injections of 0.1 Gm. per kilogram of sodium sulfapyridine in either 5 or 20 per cent solution, the time of injection varying from one half to ten minutes. The effect appears to depend on the strength of the solution and the rate of injection. With strong solutions injected rapidly, a marked fall of blood pressure and decrease of respiration occur; with weak solutions injected slowly, practically no change in blood pressure or respiration is observed. Various intermediate reactions between these extremes were observed. In the accompanying tracing the two extremes are shown.

Since it has been shown [7] that when sulfanilamide is injected intravenously or when a sufficiently high concentration in the blood is attained by oral administration renal function is temporarily depressed, the effect of the intravenous injection of sodium sulfapyridine on the creatinine clearance of dogs has been investigated. Three or four control periods were taken to determine the creatinine clearance, an intravenous injection of 0.1 Gm. per kilogram of sodium sulfapyridine was given and the creatinine clearance was measured for several periods during the next two or three hours. No change was observed in the creatinine clearance under these conditions, indicating that in dogs an immediate effect is not produced on renal function by the intravenous injection of this dose of sodium sulfapyridine.

TABLE 2.—*Toxicity of Sodium Sulfapyridine for Rabbits*

Rabbit	Dose, Gm. per Kg.	Per Cent Solution Injected	Blood Level Mg. per 100 Cc. 1 Hour After		Symptoms
			Free	Total	
B	0.3	20	20.5	32.0	None
A1	0.5	10	44.0	54.8	Muscular twitching, mild convulsions
A2	0.5	10	45.1	56.0	Muscular twitching, mild convulsions
A3	0.5	10	45.7	49.1	Muscular twitching
A4	0.5	10	41.1	53.7	Muscular twitching
E	0.5	5	40.0	44.5	Temporary respiratory stoppage, muscular twitching
F	0.5	5	52.3	52.3	Muscular twitching, slight rigidity
G	0.5	5	....	....	None
D	0.5	20	30.6	40.0	None

In view of the foregoing considerations and experimental studies on animals, a careful clinical trial of the intravenous use of sodium sulfapyridine was undertaken. It seemed that a dilute solution of the sodium salt should be used and injected fairly slowly. A 5 per cent solution in sterile distilled water was chosen. On the basis of no ionization of the salt this would be slightly hypotonic, while on the basis of complete ioniza-

4. Intravenous Use of Barbital Compounds, Report of the Council on Pharmacy and Chemistry, J. A. M. A. **97:** 1886 (Dec. 19) 1931.

5. Elvove, Ephraim, and Clark, W. M.: Bull. 135, Hyg. Lab., U. S. P. H. S., March 1924.

6. Determinations of sulfapyridine in blood were done by diazotization and coupling with N-(1-naphthyl)ethylenediamine. A 1:50 or 1:100 dilution was used and readings were made with a photoelectric colorimeter (Bratton, A. C., and Marshall, E. K., Jr.: J. Biol. Chem., to be published).

7. Marshall, E. K., Jr.; Cutting, W. C., and Emerson, Kendall, Jr.: The Toxicity of Sulfanilamide, J. A. M. A. **110:** 252 (Jan. 22) 1938.

tion it would be slightly hypertonic. In point of fact it is probably isotonic or very nearly so. The p_H of this solution is from 10.7 to 10.8. Since the sodium salt used [8] contained a molecule of water of crystallization, 3.8 Gm. of the salt for a patient weighing 65 Kg. would be equivalent to 0.05 Gm. per kilogram of sulfapyridine; 3.8 Gm. was the standard dose adopted for adult patients.

Injections of sodium sulfapyridine have been given to thirty patients. No symptoms of untoward effects have been noted in any case except vomiting during or immediately after the injection. No respiratory or acute circulatory disturbances were apparent during or immediately after the injection. No abnormality was observed in the routine examination of specimens of urine taken after the injection. It is interesting to note that vomiting is produced in both dogs and human subjects when sulfapyridine is given intravenously, so that the hypothesis of gastric irritation as its cause must be questioned. Determination of blood concentration values at various times after injection were made in fifteen injections in ten patients. The summary of the histories of these ten cases are given:

REPORT OF CASES

CASE 1.—W. D., a Negro aged 46, entered Johns Hopkins Hospital Feb. 9, 1939, suffering from type III pneumococcus lobar pneumonia which involved the greater part of both lung fields. The blood culture was negative. Treatment was instituted by administering sulfapyridine orally. On the day after entry the temperature was still elevated. Sodium sulfapyridine was given by the intravenous route at 8 p. m. February 10 and again February 11. The oral administration of sulfapyridine was continued as before. The patient made an uneventful recovery and was discharged February 28.

CASE 2.—J. S., a white man aged 20, entered Johns Hopkins Hospital Feb. 16, 1939, suffering from type II lobar pneumonia which involved the left lower lobe. The blood culture was negative. Sulfapyridine was administered by mouth, but because of a recrudescence of fever February 18 and the fact that the "free" blood sulfapyridine was only 2.7 mg. per hundred cubic centimeters, sodium sulfapyridine was administered by the intravenous route at 2 p. m. and 8 p. m. that day. The patient made an essentially uneventful recovery, which was marred only by a sterile pleural effusion which developed February 25 and required paracentesis on two occasions before it disappeared. He was discharged March 10.

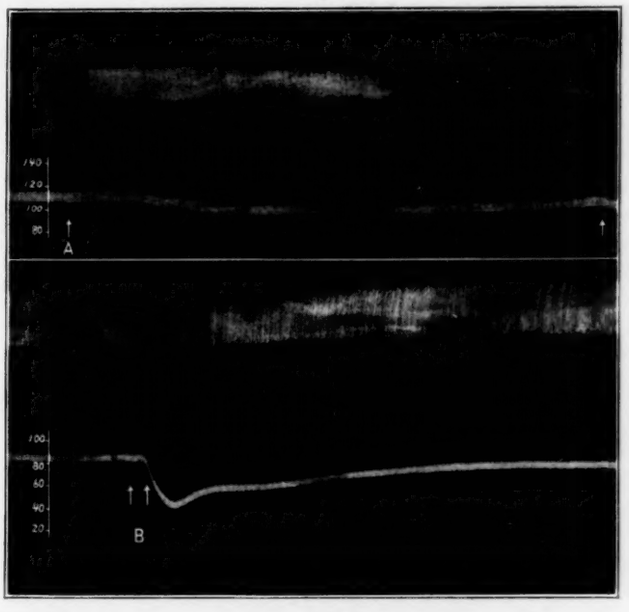
CASE 3.—C. W., a Negro aged 35, entered Johns Hopkins Hospital Feb. 20, 1939, suffering from type IV pneumococcus lobar pneumonia involving the right upper and left lower lobes. The blood culture was negative. Treatment was started with sulfapyridine by mouth. On the morning after entry to the hospital his temperature was still elevated and the level of sulfapyridine in the blood was 2.9 mg. per hundred cubic centimeters. He was therefore given the sodium salt of sulfapyridine by the intravenous route. Sulfapyridine was continued by mouth. On the eighth day the drug was discontinued because a moderate leukopenia and neutropenia developed. Recovery, however, was uneventful and he was discharged March 9.

CASE 4.—M. F., a white woman aged 47, entered Johns Hopkins Hospital Feb. 26, 1939, suffering from type III pneumococcus lobar pneumonia involving the right middle lobe. The blood culture was negative. The patient appeared quite ill. Treatment was begun with sulfapyridine administered by mouth. On the following day the temperature was elevated and the level of the sulfapyridine in the blood was 2.9 mg. per hundred cubic centimeters. She was given one intravenous injection of sodium sulfapyridine. Oral medication with sulfapyridine was continued and the patient made an uneventful recovery. She was discharged from the hospital March 12.

8. We are indebted to Dr. Randolph T. Major of Merck & Co. for a supply of the sodium salt and to Dr. K. K. Chen of Eli Lilly & Co. for the sodium salt in sterile ampules for intravenous injection.

CASE 5.—I. F., a white woman aged 38, entered Johns Hopkins Hospital Feb. 25, 1939, suffering from type III lobar pneumonia involving the right upper, middle and lower lobes. She appeared to be quite ill and showed marked distention. The blood culture was negative. Treatment was instituted by the administration of sulfapyridine by mouth. February 26 no great improvement was noted and the patient was given 3.8 Gm. of sodium sulfapyridine by the intravenous route. Medication by mouth was continued and the patient made an uneventful recovery, being discharged from the hospital March 18.

CASE 6.—G. S., a Negro aged 32, entered Johns Hopkins Hospital Feb. 4, 1939, suffering from primary type VIII pneumococcus peritonitis with bacteremia. The blood culture showed one colony of type VIII pneumococcus per cubic centimeter of blood. An exploratory laparotomy and appendectomy with drainage was done. The appendix was subsequently found to be normal. Treatment was instituted February 5 with sulfapyridine in a 0.1 per cent solution by the intravenous route. On the following day 3.8 Gm. of sodium sulfapyridine was



Effect of intravenous injection of sodium sulfapyridine on blood pressure and respiration of dogs anesthetized with ether. In *A*, upper curve shows respiration, lower curve mean blood pressure. In *B*, upper curve shows respiration, middle curve mean blood pressure, lower curve time in minute intervals. Time tracing applies for both *A* and *B*. In *A*, between the two arrows, slow intravenous injection of 0.1 Gm. per kilogram of sulfapyridine in the form of a 5 per cent solution of its sodium salt. In *B*, between arrows, rapid intravenous injection of 0.1 Gm. per kilogram of sulfapyridine in the form of a 20 per cent solution of its sodium salt.

given by the intravenous route and this dose was repeated February 7. Treatment with sulfapyridine by mouth was begun February 8. The patient's recovery was uneventful and he was discharged from the hospital February 23.

CASE 7.—M. S., a Negress aged 50, entered Johns Hopkins Hospital Feb. 6, 1939, suffering from type III pneumococcus lobar pneumonia involving the left upper and lower lobes. Treatment with type III antipneumococcus rabbit serum was started. A blood culture taken February 6 was negative but one taken February 8 showed twenty-one colonies of pneumococcus type XVI per cubic centimeter of blood. February 8 3.8 Gm. of the sodium salt of sulfapyridine was administered twice by the intravenous route and was repeated by the next day. Oral medication with sulfapyridine was commenced February 9 and continued until February 18. Recovery and convalescence were uneventful. The patient was discharged from the hospital March 7.

CASE 8.—H. H., a Negro aged 30, entered Johns Hopkins Hospital Feb. 25, 1939, suffering from type I lobar pneumonia involving the right lower lobe. He appeared to be very ill. The blood culture showed type I pneumococci. Treatment was instituted by the intravenous administration of sodium sulfa-

pyridine and was continued on the next day by giving sulfapyridine by mouth. The drug was discontinued on the fifth day of treatment because an acute hemolytic anemia developed. Recovery, however, was uneventful, and the patient was discharged March 13.

Cases 9 and 10 were essentially negative.

COMMENT

In table 3 certain additional data concerning these patients are given. The dose per kilogram is expressed in terms of sulfapyridine, the values for blood concentrations before and at various times after the injection in terms of sulfapyridine, the first figure representing the free and the second the total. In the first five cases it is to be noted that the blood concentration values represent the effect of oral as well as intravenous administration. The blood pressure was taken just before the injection and again as soon as the injection was completed. The figures for blood concentrations at various times after the injection emphasize certain important facts. It is obvious that distribution between blood and tissues is complete or nearly complete from five to ten minutes after the completion of the injection, as very little decrease occurs in these values for the next hour. The blood concentration is remarkably well sustained after a single intravenous injection, and in this respect the human subject resembles the dog more than the rabbit. One notes that the blood concentration of total sulfapyridine at one hour after injection has been from 5 to 8 mg. per hundred cubic centimeters higher than before injection; the increase in the concentration of the free form is about the same, indicating that little or no acetylation takes place in the first hour. By the fourth hour conjugation of the injected drug has begun, but in cases 3 and 8 practically no acetylsulfapyridine is present.

TABLE 3.—*Data on Intravenous Injection of Sulfapyridine in Patients*

Case	Weight, Kg.	Dose, Gm. per Kg.	Blood Concentration in Mg. per 100 Hundred Cubic Centimeters*							Blood Pressure	
			Before	5 Min.	10 Min.	1 Hr.	4 Hrs.	12 Hrs.	24 Hrs.	Before	After
1	52	0.062	4.8, 7.1 6.1, 9.3	.....	.....	11.8, 14.5 11.5, 15.1	10.3, 14.1 8.9, 12.7	6.1, 9.3	.....	118/80	118/80
2	65	0.050	2.7, 4.5 5.7, 8.0	9.2, 10.9 13.5, 15.7	.....	.....	6.1, 7.8 9.8, 12.8	.....	.....	115/50 125/60	120/50 120/60
3	62	0.052	6.9, 6.9	15.6, 15.2	.....	14.0, 13.9	13.5, 13.6	.....	.....	.....	.....
4	57	0.057	2.9, 3.6	.....	9.7, 11.0	8.9, 10.6	.....	.....	.....	.....	.....
5	62	0.052	5.3, 5.4	.....	13.9, 14.6	11.7, 12.5	.....	.....	.....	100/50	100/60
6	54	0.060	3.6, 4.3 0.4, 1.3	.....	.....	7.5, 9.2 5.7, 7,5	5.5, 7,9 3.9, 5.7	1.3, 3.3	..... 0.5, 1,7	.....	.....
7	60	0.054	0.0, 0.0 5.4, 9.3	.....	.....	5.5, 6.0 12.6, 17.3	.....	.....	.....	.....	..... 120/65
8	45	0.072	0.0, 0.0 6.8, 7.3	11.8, 11.8 18.1, 18.2	.....	8.1, 8.1 14.8, 15.0	6.8, 7.3 13.9, 14.3	.....	.....	.....	.....
9	65	0.050	0.0, 0.0	.....	6.6, 6.9	5.9, 6.6	4.4, 5.6	.....	0.7, 1.2	.....	.....
10	60	0.054	0.0, 0.0	.....	.....	5.2, 5.3	3.9, 4.6	2.7, 3.4	1.3, 1.8	.....	.....

* The first figure in each column represents free, the second figure total.

The intravenous use of sodium sulfapyridine is advantageous in that blood levels of from 5 to 8 mg. per hundred cubic centimeters can be attained with great speed and certainty. Not only in cases in which administration of sulfapyridine by mouth is impossible or in which intestinal absorption is very poor, but also in cases in which prompt action of the drug is imperative, the intravenous route is advisable. On the other hand, the potential dangers associated with intravenous medication in general and especially with strongly alkaline solutions of weak acids such as arsphenamine and the barbiturates must not be forgotten.[4] Hence the intravenous use of sodium sulfapyridine should be limited to conditions in which oral administration is impossible or does not suffice for successful therapy.

Since our use of the intravenous injection of sodium sulfapyridine has been confined to pneumococcic infections, a statement of our present practice in treating pneumococcic lobar pneumonia with sulfapyridine may be given here.

In mildly or moderately ill adult patients it is our practice to administer an immediate dose of 4 Gm. of sulfapyridine by mouth. Then maintenance doses of 1 Gm. of the drug are given orally at intervals of four hours until the patient's temperature has been normal for at least forty-eight hours. The dose of the drug is then reduced to 1 Gm. every six hours and this regimen is continued until resolution of the pneumonic process is well under way, at which point 0.5 Gm. of sulfapyridine four times a day is begun and maintained until the lungs are clear.

If, however, the patient seems to be severely ill, the sodium salt of sulfapyridine is given by the intravenous route. The dose is calculated on the basis of 0.05 Gm. of sulfapyridine per kilogram of body weight (equivalent to 0.06 Gm. per kilogram of the sodium salt with 1 mole water of crystallization). The drug is made up in a 5 per cent solution in sterile distilled water and is given by the intravenous route. It should be injected slowly at the rate of 5 cc. of the solution per minute. Great care should be taken that none of the solution of sodium sulfapyridine gets outside of the vein; otherwise a bad slough may result, as the solution is very alkaline. This dose may be repeated at intervals of from six to eight hours. Sulfapyridine in doses of 1 Gm. every four hours by mouth should be started at the time of intravenous therapy. Rarely have we found it necessary to give more than two injections of sodium sulfapyridine.

We also employ the solution of the sodium salt of sulfapyridine in the treatment of patients with pneumonia who are not responding to therapy by mouth because of poor absorption from the gastrointestinal tract. If on the day following the beginning of sulfapyridine treatment by mouth the patient's temperature is not below 101 F. rectal and the concentration of free sulfapyridine in the blood is below 4 mg. per hundred cubic centimeters, a single dose of 0.06 Gm. of the sodium salt per kilogram of body weight in a 5 per cent solution is administered by the intravenous route. The oral administration of sulfapyridine is continued according to schedule. In our experience this has resulted in prompt return of the temperature to normal.

The intravenous use of the sodium salt is also of value in the treament of patients who are vomiting. Nausea and vomiting may still occur, as has been stated previously, but, because the drug is being given intravenously, effective blood levels may be maintained. We are not certain as to what concentrations of the drug in the blood are most effective. Our experience leads us to believe that a level of 4 mg. per hundred cubic centimeters or more is desirable in pneumonia of adults.

ACUTE MYOCARDIAL INFARCTION NOT DUE TO CORONARY ARTERY OCCLUSION

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It is well known that the clinical and electrocardiographic features of coronary thrombosis may be observed in patients in whom a coronary artery thrombus is subsequently not found at necropsy. In such patients the clinical picture may have been caused by a myocardial infarct in the absence of a coronary artery occlusion. The occurrence of recent myocardial infarction without acute coronary thrombosis has been noted by Libman,[1] Oberndorfer,[2] Büchner,[3] Hamburger and Saphir,[4] Dietrich,[5] Levy and Bruenn [6] and others.[7] We have therefore undertaken a detailed systematic study of the myocardium and of the coronary vessels in order to determine the relative frequency of myocardial infarction without coronary occlusion and to discover, if possible, what physiologic factors and what clinical conditions are responsible.

It is theoretically conceivable that myocardial infarction may occur whenever there is severe myocardial ischemia, even in the absence of a mechanical occlusion of the coronary arteries. Severe myocardial ischemia and consequent acute myocardial necrosis may result from a relative inadequacy of the coronary blood flow for the functional demands of the myocardium or from changes in the blood itself. Thus Christ [8] produced disseminated areas of ischemic necrosis in the hearts of animals poisoned by carbon monoxide, while Herzog and others [9] observed areas of degeneration and hemorrhagic myonecrosis in human beings who had been poisoned in this manner. Similar areas of myocardial necrosis have been observed in persons suffering from severe anemia [10] and in animals in which anemia had been produced experimentally.[11] In cases of angina pectoris, either during an attack of spontaneous cardiac pain [12] or during exercise tests,[13] electrocardiographic changes similar to those of coronary thrombosis have been noted. These changes may be attributed to a transient functional insufficiency of the coronary flow with consequent ischemia and even necrosis of the myocardium. Büchner [14] discovered disseminated areas of myocardial necrosis in persons who had had attacks of angina pectoris during the last days of their lives but who had not suffered a coronary thrombosis. Although these isolated observations indicate that myocardial infarction may result from an inadequate coronary blood flow (coronary insufficiency) without coronary occlusion, a systematic investigation of its occurrence in human beings has not yet been reported.

It is now evident that the characteristic electrocardiogram of coronary thrombosis is due not to the thrombosis but to the resulting myocardial infarction, so that the same picture might be expected whether the myocardial injury was caused by a coronary occlusion or by coronary insufficiency. In cases in which there is pulmonary embolism, one often encounters not only a clinical picture [15] but also an electrocardiogram [16] which is identical with that of coronary thrombosis. In a recent study we [17] presented evidence that under certain circumstances pulmonary embolism may induce severe insufficiency of the coronary circulation with consequent myocardial infarction. Although there was no coronary artery thrombus, the myocardial infarct was associated with clinical and cardiographic phenomena ordinarily observed in cases of coronary thrombosis. One of us, with Sohval,[18] also observed myocardial infarction without coronary thrombosis in cases of calcific aortic stenosis (Mönckeberg) and suggested that many of the resemblances of calcific aortic stenosis to coronary sclerosis and thrombosis were actually due to such myocardial lesions. A detailed investigation of this question will be reported later.

The following report of cases of myocardial infarction not due to coronary thrombosis is made both to emphasize the frequency of this condition and to note its relationship to some of the problems already mentioned.

MATERIAL

Thirty-four cases of acute myocardial infarction without coronary thrombosis were observed among the 2,000 autopsies performed at the Mount Sinai Hospital in the last four years. Three of the previously reported cases [18] of calcific aortic stenosis were again studied because they also presented myocardial infarctions without thrombosis. Of the thirty-four more recent cases twenty-eight were observed in the last thousand autopsies, while only six were encountered in the preceding thousand autopsies. This increase is undoubtedly due to a more systematic study of the hearts in the last

From the Medical Services and the Laboratories of the Mount Sinai Hospital.

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few years, during which time we directed special attention to the subject of myocardial infarction without thrombosis. It emphasizes that diligent search is necessary to discover these lesions. In the last thousand autopsies, in which there were twenty-eight cases of myocardial infarction without coronary thrombosis, there were also sixty-three cases of myocardial infarction due to acute coronary thrombosis. Thus, as much as 31 per cent of the total number of cases of myocardial infarction occurred without acute coronary thrombosis (table 1).

TABLE 1.—*Cases of Myocardial Infarction in 2,000 Consecutive Necropsies**

Autopsy Numbers	Total	With Coronary Thrombosis		Without Coronary Thrombosis	
		Number of Cases	Per Cent	Number of Cases	Per Cent
9,001–10,000	62	56	90	6	10
10,001–11,000	91	63	69	28	31

*There were three additional cases utilized from necropsies preceding No. 9,001.

In thirty-two of the total thirty-seven cases, the heart on gross examination presented severe recent myocardial damage. Five other hearts presented microscopic acute myocardial lesions, which were discovered only on systematic study of a series of cases of recurrent pulmonary embolism.

Whenever acute myocardial lesions without recent coronary thrombosis were noted, the main coronary arteries and their branches were studied in detail throughout their course to make sure that a thrombus was not overlooked. In routine postmortem examinations, even when these are carefully performed, a coronary thrombus may be missed. We believe, so far as possible without complete microscopic serial sections, that our systematic study of the coronary vessels excludes the possibility that a coronary thrombus was present. Recent reports [19] and personal observations have shown that many so-called coronary artery thrombi are really occlusions of the coronary arteries secondary to a hemorrhage into an arteriosclerotic plaque. Such occlusions, like primary coronary artery thrombosis, produce myocardial infarction. In none of the cases of myocardial infarction here reported were there occlusions due to hemorrhage within the wall of the coronary artery. Nor were there multiple closures of the small myocardial branches of the coronary arteries. All the hearts were personally examined by us.

Transverse sections were made throughout the entire course of each main artery and its branches, at intervals of 3 mm. Extremely narrowed portions of the vessels or areas that were suspected of being the site of a thrombus were sectioned at even closer intervals and were studied microscopically. Whenever possible, the following branches were carefully examined: the left anterior descending and its primary and secondary rami; the left circumflex and its branches to the anterior wall of the left ventricle, to the obtuse margin of the heart and to the posterior wall of the left ventricle; the main right coronary branch; the right circumflex artery and the branches to the posterior interventricular sulcus and to the posterior wall of the left ventricle, and the branches of the right coronary to the anterior and posterior walls of the right ventricle and to the acute margin of the heart. The branches to the auricles were also examined but were frequently of minute caliber or could not be followed. The degree of arteriosclerosis and narrowing of the various coronary vessels and of the coronary ostiums was graded from one to four plus, according to their severity. The myocardium itself was diligently studied, grossly and histologically, sections being taken from the anterior and posterior portions of the right and left ventricle, of the interventricular septum, of the anterior and posterior papillary muscles and of any additional areas that appeared abnormal. The hearts were also examined for disease of the valves, pericarditis, endocardial abnormalities and mural thrombi.

19. (*a*) Paterson, J. C.: Capillary Rupture with Intimal Hemorrhage as a Causative Factor in Coronary Thrombosis, Arch. Path. **25**: 474 (April) 1938. (*b*) Wartman, W. B.: Occlusion of the Coronary Arteries by Hemorrhage into Their Walls, Am. Heart J. **15**: 459 (April) 1938. (*c*) Winternitz, M. C.; Thomas, R. M., and LeCompte, P. M.: The Biology of Arteriosclerosis, Springfield, Ill., Charles C. Thomas, 1938.

CLINICAL FEATURES

The clinical features are best presented in groups of cases, according to the various diseases that precipitated or predisposed to the myocardial infarction (table 2). In general, however, the entire series of cases presented one or more of the following clinical pictures: (1) cardiac pain and other clinical and cardiographic signs resembling coronary thrombosis, (2) cardiac failure with or without sudden death, (3) shock and (4) intercurrent diseases unrelated to the heart. Thus, in a general way the clinical pictures resembled those encountered in myocardial infarction due to coronary thrombosis.

The largest group, twelve cases, was associated with recurrent pulmonary embolism. Four of the patients had suffered from hypertension and an equal number from attacks of angina pectoris. In three there were symptoms of congestive heart failure. Five of the patients died in shock. Electrocardiograms had been taken in six of the cases and in three of them the cardiographic abnormalities suggested an acute coronary occlusion.

A second large group included nine instances of calcific aortic stenosis. The patients were all men and, except for one man of 30, were between the ages of 50 and 74. Hypertension was present in four cases and angina pectoris in five. Except for one patient, they were hospitalized because of symptoms of failure of the left side of the heart, to which usually those of failure of the right side were eventually added. In four of the cases death occurred rather suddenly and unexpectedly. Bundle branch or intraventricular block was present in four, and T and RT abnormalities were present in five of the cases. The clinical diagnosis most commonly suggested was coronary arteriosclerosis and cardiac failure. In two a diagnosis of coronary thrombosis had been made.

TABLE 2.—*Clinical Groups of Cases of Myocardial Infarction Without Coronary Thrombosis*

	Number of Cases
Pulmonary embolism	12
Calcific aortic stenosis	8
Coronary narrowing, old occlusion and cardiac failure	6
Postoperative infarction	4
Severe acute anemia	3
Malignant hypertension with cerebral complication	3
Occlusion of superior mesenteric artery	1
Total	37

A third group was composed of six cases in which coronary insufficiency was apparently due to severe

coronary disease itself, without recent occlusion and without any associated valvular or extracardiac factor capable of inducing coronary insufficiency. At least three of the patients had had moderate hypertension. In all but one there was a history of angina pectoris, usually related to effort. Evidence of failure of the right side of the heart was found in all. Usually there was an intensification of the signs of failure shortly before death, or else there was an acute attack of severe and persistent cardiac pain or of pulmonary edema and shock. The electrocardiograms were interpreted as indicative either of myocardial damage or of a previous myocardial infarction. In two cases there were progressive electrocardiographic changes characteristic of recent myocardial infarction.

Four cases were observed in which myocardial infarction appeared after an operative procedure. The ages ranged from 54 to 79. Three were patients with hypertension and diabetes. Two of them had had attacks of acute urinary retention due to prostatic obstruction; one died five days after a suprapubic cystostomy; in the other clinical and cardiographic evidences of myocardial infarction developed in the third week after a similar operation. In a third case, on the second day after operation for a strangulated femoral hernia, the blood pressure dropped from 168 mm. of mercury systolic and 90 diastolic to 110 systolic and 64 diastolic. Transient atrioventricular dissociation developed and she died suddenly on the seventeenth day after operation with symptoms of shock. The fourth patient died three days after a cecostomy for an obstructing carcinoma of the sigmoid colon.

In three cases, myocardial infarction was found in persons who clinically presented a cerebral complication of severe hypertension. In all three the systolic pressure was well above 200 mm. of mercury and the diastolic pressure above 120. During the week before death, evidence of progressive cerebral softening, characterized by a stiff neck, changes in the reflexes and an appearance resembling decerebrate rigidity developed in one patient. The second patient suddenly became unconscious, suffered a hemiplegia and died in pulmonary edema and shock. The third patient, a woman aged 28, presented signs of uremia and acidosis. Eight days before death convulsions developed which were attributed to hypertensive encephalopathy. In none of these cases was there a fall in blood pressure.

In the remaining four cases anemia or shock may have played a role in precipitating coronary insufficiency and ensuing myocardial infarction. One patient was a woman aged 19 in whom in the fifth month of pregnancy a bloody diarrhea developed as the result of ulcerative colitis. Following sulfanilamide therapy her temperature rose to 106 F., the hemoglobin dropped to 15 per cent and she died with symptoms of peritonitis and bronchopneumonia. Sulfanilamide itself has not been found to produce myocardial necrosis. The second patient was a man aged 59 who vomited a large amount of black fluid, became very weak and had several loose, bloody and tarry stools. The hemoglobin fell to 45 per cent. Despite transfusions, acrocyanosis of both hands and feet developed and he went into collapse and died eleven days after the onset of the attack. The third patient was a man aged 78 in whom signs of shock developed as the result of an occlusion of the superior mesenteric artery with infarction of the intestine. The fourth was a man aged 66 with severe acute hemolytic anemia.

PATHOLOGY OF THE HEART

Ordinarily, infarction denotes the morphologic changes, including necrosis, in an organ whose blood supply is interrupted. Technically, therefore, the objection could be raised that the lesions observed in these cases cannot be termed infarcts because there is no actual occlusion of the nutritive vessels. The myocardial changes seen in the cases cited, however, were indistinguishable from those ordinarily described as infarcts and, like infarcts, consisted of areas of necrosis due to ischemia caused by an inadequate coronary blood supply. Occasionally a large confluent area of muscle was affected, similarly to that observed with recent occlusion of a major coronary vessel. More often, however, there were smaller isolated or disseminated foci of myomalacia, recognizable grossly.

The myocardial lesions were, in the main, confined to the wall of the left ventricle and its papillary muscles. The vulnerability of this site has been previously stressed by Büchner.[14] This localization was especially remarkable when, as in a few cases, the acute myocardial damage was entirely or almost entirely confined to one of the papillary muscles of the left ventricle. The anterior wall was affected somewhat more frequently than the posterior, but as a rule there were microscopic lesions in both of these segments of the left ventricle. Another feature of localization of the myocardial lesions is their occurrence in the subendocardial region. This is the portion of the myocardium farthest removed from the blood supply and therefore most severely affected by a relative insufficiency of the coronary flow. The localization of acute ischemic myocardial lesions to the subendocardial region also suggests that the nourishment of muscle fibers through the thebesian vessels is insignificant.

The gross changes varied in severity and extent. They consisted of greenish, yellowish or grayish discoloration of the muscle tissue, which was often streaked or mottled with hemorrhage. Often, however, hemorrhagic areas appeared on microscopic examination to be areas of organization with numerous congested capillaries and other small vessels. Occasionally the gross appearance of the affected myocardium was that of fatty change. Healed fibrous areas were often associated with acute necrosis. In some cases there were extensive fibrotic areas or aneurysms of the heart wall due to an old coronary occlusion.

Microscopic study revealed acute, organizing and chronic lesions. Early evidences of myocardial degeneration consisted of an uneven staining of the muscle fibers with the appearance of darker and lighter eosinophilic bands and loss of myostriation. Signs of more severe ischemic change were vacuolization of the muscle fibers, karyorrhexis or complete disappearance of their nuclei and, finally, homogenization and disappearance of muscle fibers. Sometimes there were large areas of vacuolated muscle fibers and fibrous tissue. In the vicinity of the necrotic muscle there were usually reactive foci of polymorphonuclear leukocytes, lymphocytes and mesenchymal cells [20] and sometimes focal or widespread areas of hemorrhage. Organization occurred early, as indicated by fibroblasts, cellular edematous connective tissue and congested blood vessels.

As a rule the coronary vessels showed extensive arteriosclerotic thickening with narrowing of their lumens. The left anterior descending branch appeared

20. Ehrlich, J. C., and Lapan, B.: The Anitschkow Myocyte, to be published.

to be most frequently and most severely involved, although the circumflex branch of the left coronary and the main right coronary and its circumflex branch were also conspicuously affected. There was no evidence either of intramural hemorrhage or of recent thrombosis of the coronary arteries or their branches. In the group of cases presenting coronary narrowing and failure, without other associative disease, there was almost invariably evidence of an old coronary occlusion. On the other hand, there were several cases in the group presenting pulmonary embolism and isolated instances in the other groups in which the coronary vessels were essentially normal or gave only slight evidences of arteriosclerosis without narrowing (table 3).

Except in a few cases the hearts were markedly hypertrophied and weighed considerably more than normal. However, a number were of normal size. The heart of a 19 year old girl with anemia weighed only 225 Gm. But as a rule the heart weights averaged between 400 and 500 Gm. The largest hearts were those associated with calcific aortic stenosis. The weights ranged between 450 and 1,300 Gm., the average being 710 Gm.

TABLE 3.—*Heart Weight and Degree of Coronary Narrowing*

Group	Heart Weight, Gm.		Degree of Coronary Narrowing		
	Average	Range	None or Slight	Moderate	Severe
Pulmonary embolism...	420	300–560	4	2	6
Calcific aortic stenosis.	710	450–1300	2	3	3
Coronary narrowing and old coronary occlusion	380	260–460	0	0	6
Postoperative	465	420–580	1	0	3
Malignant hypertension	450	360–495	2	1	0
Severe acute anemia...	440	225–660	2	0	1
Occlusion of superior mesenteric artery....	475	.....	0	1	0
Totals			11	7	19

ILLUSTRATIVE CASES

CASE 1.—*Massive pulmonary embolism* (practice of Dr. Samuel Silbert).

A man aged 58 had for fifteen years suffered pain in the left calf on walking. For two weeks there was pain in both legs even at rest. Occasionally the patient had suffered from precordial pain, which was also worse on exertion. Examination revealed a large heart and a systolic murmur at the apex. The popliteal vessels were closed. The blood pressure was 130 systolic and 80 diastolic. The diagnosis was arteriosclerotic narrowing of the arteries of the lower extremities.

After two weeks in bed the patient contracted an infection of the left foot and lymphangitis of the left leg. The next day attacks characterized by loss of consciousness, feeble pulse and temporary cessation of respiration developed. Eight days later he died in one such attack. An electrocardiogram, revealing depression of the ST interval in leads 1 and 4, elevation in lead 3 and diphasic T waves in lead 4, was interpreted as suggesting acute myocardial infarction. Postmortem examination revealed massive pulmonary embolization involving the pulmonary conus and the main branches of the pulmonary artery; subacute myomalacia of the septum and left ventricle, and severe arteriosclerotic narrowing of the main branches of the left coronary artery, but no occlusion.

CASE 2.—*Calcific aortic stenosis* (service of Dr. George Baehr).

A man aged 68 had a history of mild diabetes and excessive alcoholism. For one year he had suffered from weakness, dyspnea and substernal and precordial pain on exertion. Eight days before his admission to the hospital, very severe and persistent cardiac pain developed, accompanied by intense dyspnea and prostration. An electrocardiogram, taken five months before admission, disclosed a prolonged PR interval (0.28 second) and intraventricular block. His blood pressure at that time was 170 systolic and 90 diastolic.

Examination in the hospital revealed slight cyanosis, congestion of the base of the lungs, enlargement of the heart and a harsh diffuse systolic murmur, loudest over the aortic area. The blood pressure was 90 systolic and 65 diastolic. The clinical diagnosis was coronary artery thrombosis and diabetes mellitus. The patient died twelve hours after admission.

Necropsy showed diffuse myocardial necrosis, especially in the subendocardium of the left ventricle and in the posterior papillary muscle, calcific stenosis of the aortic valve, carcinoma of the fundus of the stomach, and cirrhosis of the liver. The coronary vessels were moderately arteriosclerotic but widely patent.

CASE 3.—*Severe coronary narrowing without recent occlusion* (service of Dr. George Baehr).

A woman aged 42 had suffered from dyspnea and angina pectoris on effort and from intermittent claudication for five years. Six months before admission to the hospital she had a severe attack of cardiac pain, which recurred intermittently for seven weeks. During three months in bed the patient became intensely dyspneic and orthopneic, and edema of the ankles developed. After a partial remission the symptoms became greatly intensified three days before admission. On examination the patient was acutely dyspneic, orthopneic and somewhat cyanotic. The heart was enlarged to the left and its sounds were of poor quality. There was a gallop rhythm with a rate of 120 a minute. There were a large tender liver, dependent edema, pleural effusions and engorgement of the cervical veins. The blood pressure was 110 systolic and 55 diastolic but rapidly fell to 80 systolic and 60 diastolic. The electrocardiogram, taken a day after admission, disclosed a ventricular tachycardia with a rate of 200 a minute, right axis deviation, widening and notching of the QRS complexes and inversion of the T wave in lead 3. The patient died thirty-six hours after admission. The clinical diagnosis was coronary sclerosis, recent coronary thrombosis and congestive heart failure.

Postmortem examination revealed moderate arteriosclerotic narrowing of the left and severe narrowing of the right coronary artery and branches. There was an old atherosclerotic occlusion of the main right coronary artery, a large scar of a healed infarct with early aneurysm of the anterior wall of the left ventricle and acute myomalacia of the interventricular septum. Recent coronary occlusion could not be found.

COMMENT

The myocardial lesions in these cases were interpreted as being due to an intense myocardial ischemia caused by an inadequate coronary blood supply. Clinically and pathologically these cases did not appear to differ essentially from those presenting myocardial infarction due to an acute thrombotic occlusion of the coronary vessels. In most instances, coronary insufficiency was due in part to atherosclerotic narrowing of the coronary arteries. However, these changes did not usually appear sufficient in themselves to produce the acute myocardial necrosis, and in some cases myocardial infarction occurred when the coronary vessels were normal. It is likely that the associated disease, such as pulmonary embolism and calcific aortic stenosis, acted as a precipitating or contributing factor in the myocardial infarction. Occasionally two of these diseases were combined in one case. That these associated diseases were not merely coincidental appears to be corroborated by their frequency in cases of myocardial infarction without coronary thrombosis. Further support may be found in the pathologic physiology and clinical signs of these diseases, which indicate that there is a relative diminution in coronary flow and myocardial ischemia. Myocardial necrosis without coronary occlusion in the epileptic has been ascribed to spasm of the coronary arteries.[21] The possible role of coronary

21. Neubürger, Karl: Ueber die Herzmuskelveränderungen bei Epileptikern, Frankfurt. Ztschr. f. Path. **46**: 14, 1933.

spasm in the production of myocardial infarction in the cases here reported is a matter of conjecture.

The relation of recurrent pulmonary embolism to myocardial infarction is discussed in detail elsewhere. We believe that coronary insufficiency occurs with pulmonary embolism chiefly because of the attendant shock. The associated asphyxia and exaggerated vagal reflexes causing coronary constriction may also play a role. Myocardial necrosis is not an invariable result of pulmonary embolism. Pulmonary embolism is most likely to produce myocardial ischemia severe enough to cause morphologic myocardial change if there is recurrent embolization, if the coronary arteries are already narrowed by arteriosclerosis, if the heart is previously hypertrophied and if there is an adequate duration of life after the embolism.

Clinical evidences of myocardial ischemia in calcific aortic stenosis are quite familiar. They consist essentially of angina of effort, conduction disturbances, abnormalities of the RS-T transitions and T waves in the electrocardiogram, and sudden death. The conspicuous hypertrophy of the hearts, the average weight of which in our series was 710 Gm., indicates the increased demand for blood in these cases. Presumably there is a chronic state of myocardial ischemia due to an inadequate coronary supply even when the coronary vessels themselves are normal. But frequently in these cases there was, in addition, moderate or severe narrowing of the coronary vessels, which tended to increase the coronary insufficiency. Coronary insufficiency in cases of calcific aortic stenosis is due, on the one hand, to the greater blood supply needed to accommodate the increased musculature and work of the heart and, on the other hand, to the diminished coronary flow because of the high intraventricular tension and increased systolic peripheral coronary resistance.[22] The coronary flow is further diminished when the vessels are narrowed by arteriosclerosis. This disproportion between coronary flow and myocardial requirement is accentuated during exertion because of the absence of ventricular reserve.

The pathologic physiology of coronary insufficiency in the remaining groups of cases can only be conjectured. In the cases occurring after operation, the shock of operation itself may have been an important factor; but it should be emphasized that in three of our four cases in this group the patients had hypertension and diabetes with large hearts, narrow coronaries and clinical and pathologic evidence of a previous coronary occlusion. The shock factor may be invoked also in cases of myocardial infarction associated with severe gastrointestinal hemorrhage and with embolism of the superior mesenteric artery. In cases presenting severe anemia, myocardial infarction might have resulted from the reduced oxygen-carrying power of the blood. Anemia per se was an extremely uncommon cause of myocardial infarction in our material. A systematic study of the relation of myocardial infarction to anemia will be reported.

The relationship between cerebral complications, particularly cerebral thrombosis, and myocardial infarction is also uncertain. The three patients in this group all had severe (so-called malignant) hypertension and large hearts, but their coronary vessels were surprisingly little altered. Myocardial changes in cases of malignant hypertension have been reported by Schürmann and MacMahon.[23] We believe that these lesions are the result of functional coronary insufficiency and not of the altered permeability of the coronary vessels, which these authors have termed "dysorie."

The remaining group of cases, in which acute myocardial infarction occurred as a result of coronary narrowing alone, is of special interest. Apparently such narrowing, if severe enough, can produce extreme myocardial ischemia and consequent acute infarction in the absence of acute occlusion. Usually a previous occlusion, arteriosclerotic or thrombotic, of a main coronary branch had already seriously compromised the coronary blood supply, while a large aneurysmal scar of the healed infarct had reduced the effective cardiac musculature. These incidents were denoted clinically not only by angina pectoris of effort but also by signs of congestive heart failure. Progressive narrowing of the remaining, already narrowed, coronary vessels finally produced sufficient ischemia to cause acute morphologic changes. The immediate precipitating factor is uncertain, but the occurrence of the acute infarction is usually denoted clinically by an intensification of the signs of failure with or without cardiac pain.

Finally, it should be reemphasized that the clinical features and electrocardiographic alterations attributed to acute coronary thrombosis are due actually to the resulting myocardial damage. Since acute myocardial necrosis may occur with severe coronary insufficiency without thrombosis, it is clear that in such a disease as calcific aortic stenosis and other conditions associated with coronary insufficiency, a clinical picture identical with that of coronary thrombosis may be observed and no coronary thrombus found. It would appear more accurate to employ the clinical diagnosis myocardial infarction than coronary thrombosis. An attempt should be made to determine clinically the presence of a contributing cardiac or extracardiac factor which may be responsible for the infarct.

SUMMARY

1. Thirty-seven cases of acute myocardial infarction not due to coronary thrombosis were observed in some 2,000 autopsies. In the last 1,000 autopsies 31 per cent of the cases of myocardial infarction were found without recent coronary thrombosis.

2. Twelve cases were associated with pulmonary embolism, eight with calcific aortic stenosis and six with intense coronary narrowing and old occlusion; four occurred after operation and three after a cerebral accident in patients with malignant hypertension. In three there was severe anemia and in one an occlusion of the superior mesenteric artery.

3. It is suggested that the acute myocardial damage in the various cases was due to intense coronary insufficiency. This insufficiency was due in part to arteriosclerotic narrowing of the coronary arteries and to myocardial hypertrophy but also to the abnormal circulatory dynamics of the associated disease, which usually precipitated the infarction. Myocardial infarction may also be due solely to progressive coronary narrowing of extreme degree.

4. Sudden death in aortic stenosis and other diseases associated with coronary insufficiency may be caused by severe myocardial ischemia and necrosis without recent occlusion of the coronary artery.

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22. Green, H. D.: The Coronary Blood Flow in Aortic Stenosis, Am. J. Physiol. **115**: 94 (March) 1936.

23. Schürmann, P., and MacMahon, H. E.: Die maligne Nephrosklerose, Virchows Arch. f. path. Anat. **291**: 47, 1933.

REMOVAL OF THE THYMUS

SURGICAL VERSUS ROENTGEN RAY EXTIRPATION

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In a series of recent articles, co-authors Shay, Gershon-Cohen, Fels and the Meranzes [1] have reported that roentgen ray destruction of the thymus gland in young albino rats produced a delayed development of the male testes, with resultant temporary sterility, and a hypophysial change similar histologically to that produced by castration. These changes were said to be progressive to the age of 100 days, after which reparative processes were said to be instituted which resulted in complete recovery of the testes. These observations deserve careful consideration in the light of the many negative results previously obtained by surgical extirpation of the thymus. We believe that the average clinician should be aware of the differences in effect of the two methods. It is with this fact in mind that we wish to present our experimental results and views on this controversial subject.

We would assume that roentgen ray ablation of the thymus gland, experimentally at least, was for the same primary purpose as surgical removal, namely to determine what effects a lack of thymus secretion would have on the experimental animal. We would further assume that similar results should be obtained under the two circumstances.

Park and McClure,[2] who reviewed the entire subject of thymectomy and who included a series of experimental observations on dogs, were of the opinion that extirpation of the thymus probably does not influence growth or development and the thymus is not essential to life. Hammar,[3] Crotti,[4] Marine [5] and Andersen [6] have likewise reviewed the literature and have arrived at essentially the same conclusions. Our own observations, which we wish to present, add only to the confirmation of their data.

Pappenheimer [7] showed that complete removal of the thymus gland in the rat could be effected through surgical means. He made serial sections through the viscera of the neck and thorax to prove that there were no remnants postoperatively. Einhorn and Rowntree [8] believe that surgical removal is more satisfactory than roentgen irradiation. We wish at the outset to concur with them and with others who have performed thymectomy on the albino rat in the observation that thymectomy through the midline, sternum-splitting incision described by Basch [9] is a simple and complete operation. It required no longer than five minutes to anesthetize the animal, expose and remove the gland and repair the wound. Subsequent autopsy did not show regeneration of fragments. Thus the removal of the thymus could be said to be complete and final. Furthermore, it did not entail subjecting the animals to the repeated trauma which would result from the relatively massive doses of roentgen rays on four successive days, as in the procedure of Shay and his co-authors.[1] Yet these writers suggest that total destruction of the thymus is more easily and completely effected by roentgen irradiation. They insist that irradiation resulted in complete atrophy of the thymus and at the same time state that complete removal was not necessary to obtain the results which they report.

EXPERIMENTAL OBSERVATIONS AND RESULTS

Our observations were made on twenty-four male Wistar albino rats; twelve were thymectomized at an average age of 25 days, and twelve, used as controls, were subjected to the identical operative technic except for the actual removal of the gland. The rats were killed and examined post mortem at an average age of 90 days. The hypophysis, thyroid, adrenals, testes, epididymides and spleen were removed and weighed. Supplementary recordings as to body weight, head weight, body length and tail length were also made. These measurements were subjected to small sample statistical analysis in order to observe more accurately whether or not mathematically significant changes had occurred. All methods employed were standardized ones, previously used and described.[10]

*A Comparison of Mean Weights and Differences in Thymectomized and Control Male Wistar Albino Rats**

(From 25 to 90 day animals)

	Control	Tests	Difference
Body weight	267.00	265.30	— 1.70
Head weight	21.46	21.65	+ 0.19
Body length	22.05	21.87	— 0.18
Tail length	20.16	19.83	— 0.33
Hypophysis	0.0083	0.0078	— 0.0005
Thyroid	0.0180	0.0182	+ 0.0002
Adrenals	0.0278	0.0285	+ 0.0007
Spleen	0.5613	0.4917	— 0.0696
Testes	2.8708	2.8178	— 0.0530
Epididymides	0.7853	0.7609	— 0.0244

* Measurements in grams or centimeters.

As a result of this experiment, we were unable to confirm any of the observations reported by Shay and his co-workers.[1] There were no significant quantitative changes in the length of the body and tail or in the weight of the head, body, hypophysis, thyroid, suprarenal glands, testes and epididymides. Weekly recordings of the body weight did not reveal significant changes. There was a significant change in the weight of the spleen, but we wish to reserve this fact for

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1. (*a*) Gershon-Cohen, Jacob; Shay, Harry; Fels, Samuel S.; Meranze, Theodore, and Meranze, D. R.: Studies in the Physiology of the Thymus, Science **87:** 20 (Jan. 7) 1938; (*b*) The Thymus: The Effect of Atrophy of Thymus Following Roentgen Irradiation, Am. J. Roentgenol. **39:** 263 (Feb.) 1938; (*c*) The Thymus: Studies of Some Changes in the Gonads and Pituitary Following Its Destruction by Roentgen Irradiation, J. A. M. A. **112:** 290 (Jan.) 1939.

2. Park, E. A., and McClure, Roy D.: The Results of Thymus Extirpation in the Dog with a Review of the Experimental Literature on Thymus Extirpation, Am. J. Dis. Child. **18:** 317 (Nov.) 1919.

3. Hammar, J. A.: The New Views as to the Morphology of the Thymus Gland and Their Bearing on the Problem of the Function of the Thymus, Endocrinology **5:** 543 and 731, 1921.

4. Crotti, André: Thyroid and Thymus, revised edition, Philadelphia, Lea & Febiger, 1922.

5. Marine, David, in Cowdry, E. V.: Special Cytology, New York, Paul B. Hoeber, Inc., 1928, vol. 1, section 18, p. 558.

6. Andersen, Dorothy H.: The Relationships Between the Thymus and Reproduction, Physiol. Rev. **12:** 1 (Jan.) 1932.

7. Pappenheimer, A. M.: The Effects of Early Extirpation of the Thymus in Albino Rats, J. Exper. Med. **19:** 319, 1914.

8. Einhorn, Nathan H., and Rowntree, Leonard G.: The Biological Effects of Thymectomy, Endocrinology **21:** 659 (Sept.) 1937.

9. Basch, K.: Beiträge zur Physiologie und Pathologie der Thymus: I. Ueber die Ausschaltung der Thymusdrüse, Jahrb. f. Kinderh. **64:** 285, 1906; quoted by Park and McClure.[2]

10. Freudenberger, C. B., and Hashimoto, E. I.: A Summary of Data for the Effects of Ovariectomy on Body Growth and Organ Weights of the Young Albino Rat, Am. J. Anat. **62:** 93 (Nov.) 1937. Freudenberger, C. B., and Clausen, F. W.: Quantitative Effects of Theelin on Body Growth and Endocrine Glands of Young Albino Rats, Anat. Rec. **69:** 171 (Sept.) 1937.

future confirmation with another group of animals, which we are at present studying.[10a]

Criticism might arise from the fact that our rats were 25 days of age at the time of operative removal of the thymus, but Andersen,[6] whose work is not quoted by Shay,[1] with a more nearly comparable group of young male rats did not confirm their results. She reported that in animals thymectomized at the age of 1 day, for which litter mates served as controls, there were no significant alterations in the age or weight at puberty. She summarized her results by stating that "from an analysis of this work on thymectomy, we may conclude that thymectomy does not prevent, hasten or delay the arrival of sexual maturity, and it does not prevent the occurrence of normal litters. In other words, aside from the immediate effects of the operative injury, it has not been shown that deprivation of thymus, even in early life, has any effect upon the development and function of the sexual apparatus."

In reviewing the articles submitted by Shay and his co-workers [1] we were somewhat at a loss as to the exact number of litter mates used in their experiment. It was stated [1b] that there were thirty-five litters of animals, but there was no record in any of the articles of individual protocols to which reference could be made. The growth chart appears to have been constructed from one litter of animals (litter 19). Likewise, the organ weight: body weight ratios appear to have been derived from observations made on one litter (litter 18). In similarly limited data, it is always possible to obtain great variation in either direction, depending on the litter selected. Since their three papers, which followed in rapid succession, were admittedly incomplete, we have no doubt that future papers will contain the necessary data.

COMMENT

In view of the marked discrepancies in the results obtained with the two methods, i. e. surgical extirpation and roentgen ray ablation of the thymus, some explanation would seem logical.

The male albino rat at the age of 48 hours has an average length of from 47 to 52 mm.[11] The aperture of from 8 to 10 mm. through which Shay and his co-workers [1] irradiated the thymus would therefore constitute approximately one fifth of the total body length of the animal. This would seem to be a relatively large area to subject to massive roentgen ray exposure, although these authors [1b] went to some lengths to prevent stray irradiation.

Dissection of 2 day old animals reveals that in many instances the two superior poles of the thymus gland extend paratracheally as high as the thyroid gland. Further, there is hardly a difference of from 5 to 7 mm. between the upper portion of the body of the thymus and the lower portion of the thyroid. Conceivably, in order to effect complete exposure of the thymus gland, one must direct the roentgen rays dangerously close to the area of the thyroid; in fact it is questionable whether one could be absolutely certain that the thyroid gland did not receive stray irradiation. In further substantiation of these anatomic hypotheses, these authors say: "In some animals we tried to give exposures above the area of the thymus. This was found to be impossible, because in order to avoid the region of the thyroid the upper part of the thymus was usually involved, so that varying degrees of destruction of the thymus resulted in this group." Obviously, if it was impossible to avoid the upper part of the thymus during irradiation of the area near the thyroid gland, we must assume, conversely, that it would also be impossible to avoid the thyroid gland or immediately adjacent areas in attempting to destroy the thymus completely.

In strapping the animal to the board, the head is necessarily extended, throwing the base of the sphenoid bone, on which rests the pituitary gland, nearly to the level of the upper reaches of the superior poles of the thyroid gland. It would seem then that difficulty would be encountered in shielding not only the thyroid gland but also the hypophysis itself from the large doses of roentgen rays to which the thymus was subjected.

We mention these facts only because it has long been known [12] that extirpation of the thyroid gland gives rise to changes in the hypophysis which to us seem strangely similar to those described by Shay as the "physiologic castration" due to destruction of the thymus by roentgen rays.

Let us compare these descriptions. Shay [1b] said: "The pituitary gland seems slightly enlarged, more in the male than in the female. And the anterior lobe is the part most involved. There is an increase in the number of basophils. They are enlarged and show irregularities in staining affinity. So-called castrate cells make their appearance. . . . Eosinophils seem normal, although possibly slightly decreased in number." On the other hand, from experiments on an entirely different organ (thyroid), Severinghaus, Smelser and Clark,[13] in reviewing work by Simpson and Hunter,[14] Marine,[15] Trautmann,[16] Bryant [17] and Kojima [12] and also their own observations on pituitary changes resulting from removal of the thyroid gland, reported as follows: "Marked changes occur in the anterior lobe of the pituitary. The basophils are increased in number, are of maximum size, and give the pituitary the castrate appearance. Many have deeply chromatic elongated nuclei. Large numbers of typical castration cells are present." Certainly one might be justified in suspecting from these descriptions alone that the pituitary changes reported by Shay [1] might be in part due to unsuspected injury of the thyroid gland by the roentgen rays.

Furthermore, although in the literature available to us we were unable to find reports on the effects of removal of the thyroid gland at the early age at whcih the thymus experiment was undertaken, clinically it has often been demonstrated in cretins that there is a delay in growth of the sexual glands and accessories as well as in sexual maturation. With these observations in mind, the possibility cannot be excluded that effects other than those directly attributable to irradiation of the thymus gland might have contributed to the results reported by Shay and his co-workers.

10a. Since this article was submitted for publication on Feb. 8, 1939, additional data have been obtained making a total of twenty-four test animals with a similar number of controls. The results confirm the observations recorded.

11. Donaldson, H. H.: The Rat: Data and Reference Tables, ed. 2, Memoirs of the Wistar Institute of Anatomy and Biology, No. 6, Philadelphia, 1924.

12. Kojima, M.: Studies on the Endocrine Glands: II. The Relations of the Pituitary Body with the Thyroid and Parathyroid and Certain Other Endocrine Organs in the Rat, Quart. J. Exper. Physiol. **11:** 319, 1917.

13. Severinghaus, A. E.; Smelser, George K., and Clark, Helen M.: Hypertrophy of the Pituitary Following Ablation of the Thyroid, Proc. Soc. Exper. Biol. & Med. **31:** 1127 (June) 1934.

14. Simpson, S., and Hunter, A.: The Possible Vicarious Relationship Between the Pituitary and Thyroid Glands, Quart. J. Exper. Physiol. **4:** 257, 1911.

15. Marine, David: The Present Status of the Functions of the Thyroid Gland, Physiol. Rev. **2:** 521 (Oct.) 1922.

16. Trautmann, A.: Hypophyse und Thyreoidektomie, Frankfurt. Ztschr. f. Path. **18:** 173, 1916; quoted by Severinghaus and his associates.[13]

17. Bryant, A. R.: The Effects of Total Thyroidectomy on the Structure of the Pituitary Gland in the Rabbit, Anat. Rec. **47:** 131, 1930.

SUMMARY AND CONCLUSIONS

Observations made on the effects of removal of the thymus gland from twelve male Wistar albino rats at the age of 25 days, and statistically compared with those on a similar group of controls, showed at 90 days that there were no mathematically significant changes in the length of the body and tail or in the weight of the body, head, hypophysis, adrenals, thyroid, testes and epididymides. The weekly increase in weight was not significantly altered. Microscopic sections of the testes of thymectomized animals showed no departure from the normal. Thymectomized animals between puberty and the age of 90 days were found to be capable of inseminating normal female animals.

Descriptions of the effects of ablation of the thymus by means of roentgen rays, as recorded by Shay and his co-authors, cannot be harmonized with the many reports of experimenters who surgically removed the gland. A partial review of the literature would suggest that the changes obtained by those employing roentgen rays might be due to injury to the thyroid gland.

TEMPORARILY POSITIVE KAHN AND WASSERMANN REACTIONS

IN INFECTIOUS MONONUCLEOSIS: REPORT OF A CASE

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The fact that temporarily positive serologic tests for syphilis may occur in infectious mononucleosis without evidence of syphilis has been noted but is not generally recognized. Apparently the earliest notation of this finding was made in 1928 by Löhe and Rosenfeld,[1] who described what they termed "monozytenangina" in a housewife aged 40. In the light of present knowledge this case would seem quite compatible with the angiose variety of infectious mononucleosis. It was Weber,[2] however, who in 1930 first called attention to the fact that temporarily positive serologic tests for syphilis may occur in glandular fever. He reported three cases which all yielded transiently positive serologic reactions as evidenced by positive Wassermann or Meinicke tests. A year later Gooding[3] described a series of twenty-seven cases (from the London epidemic of 1930) in which sixteen cases gave either a positive or an "incompletely" positive Wassermann reaction. Those cases which showed a negative Wassermann reaction were said in most instances to have yielded a positive Kahn reaction.

Radford and Rolleston[4] have also reported two cases of glandular fever with positive Wassermann reactions, but syphilis does not seem to have been adequately excluded.

Bernstein[5] in 1934 noted in two instances the association of a false positive Wassermann reaction with increased heterophile antibody titer, though the Eagle[6] flocculation tests were negative. In both patients the serums subsequently yielded negative Wassermann reactions on the twenty-fourth and fifty-eight day of disease respectively.

During the current year Hatz[7] has reported a case of infectious mononucleosis with a transiently false positive Wassermann reaction, a negative Kline reaction and a sheep cell titer for heterophile antibodies not rising above 1:32.

Out of sixty cases of infectious mononucleosis observed at the Johns Hopkins Hospital during the past five years, Bernstein[8] has recently collected six cases (including two cases previously reported) with temporarily false positive serologic reactions for syphilis. Of the sixty patients, thirty-seven had been given routine Eagle or Wassermann tests, the remainder not having been given serologic tests for syphilis.

In view of the clinical significance of these data it has seemed worth while to report the following case:

REPORT OF CASE

A student nurse, aged 23, admitted to the New Haven Hospital Jan. 10, 1938, complained of a cutaneous eruption.

Dec. 29, 1937, she had reported to the Nurses' Infirmary with an infection of the upper respiratory tract lasting two days. At that time she had complained of sore throat, swollen eyes, nasal discharge and slight general malaise. Elevation of temperature was minimal, reaching only 100 F. on the first day and falling to normal on the second day. January 9 the patient noticed a cutaneous eruption in the right antecubital fossa which, by the morning of January 10, had spread considerably. There were no other symptoms and she felt quite well. There was no history of syphilis and no reason to suspect that an acquired or congenital syphilitic infection existed.

On admission to the New Haven Hospital January 10 there was observed a rather faint morbilliform eruption over the neck, chest, abdomen, upper part of the back and in the right antecubital fossa. The anterior cervical nodes were enlarged and in both posterior cervical chains enlarged nontender nodes could be readily palpated, the enlargement being greater on the right than on the left. The temperature was 99.8 F. and the patient seemed quite comfortable and did not appear ill. The spleen was not palpable.

On admission the leukocyte count was 6,050 with 65 per cent lymphocytes. Among these were found a number of large cells, characteristic of those ordinarily present in infectious mononucleosis. The sheep cell agglutination test was positive in a dilution of 1:512. The Kahn reaction was 4+ and the Wassermann reaction was negative with the alcoholic antigen but 4+ with the cholesterinized antigen.

The patient's subsequent clinical course was quite satisfactory. She never felt particularly ill and she remained afebrile. The cutaneous eruption totally disappeared within twenty-four hours. The course of the sheep cell agglutination titer, the Kahn and Wassermann reactions and the blood counts are summarized in the accompanying table.

The enlargement of most of the cervical lymph nodes disappeared within a week after admission to the hospital, but several nodes could be palpated in the right posterior chain as late as February 5, and on March 5 a single node in the same chain was still palpable. February 5 a slight papular eruption over the forehead developed but subsided by March 5.

Agglutinations for various bacteria were done on the serum of February 5. There was no agglutination with the following antigens: Eberthella typhi, Salmonella paratyphi, Salmonella schottmülleri, Eberthella paradysenteriae (Flexner), Eberthella dysenteriae.

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1. Löhe, Heinrich, and Rosenfeld, Herbert: Ueber Monozytenangina mit anschliessendem vorübergehend seropositiven Erythema nodosum, zugleich ein Beitrag zur Differentialdiagnose zwischen luetischer und nichtluetischer Angina, Dermat. Ztschr. **53**: 373-383 (April) 1928.

2. Weber, F. P.: Glandular Fever and Its Lymphotropic Blood Picture—Sometimes Without Obvious Glandular Enlargement, M. Press (London) **130**: 65-67 (July 23) 1930. Weber, F. P., and Bode, O. B.: Beitrage zum "Drüsenfieber," München. med. Wchnschr. **78**: 1598-1600 (Sept. 18) 1931.

3. Gooding, S. E. F.: On Glandular Fever or Infectious Mononucleosis, Practitioner **127**: 468-483 (Oct.) 1931.

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5. Bernstein, Alan: Antibody Responses in Infectious Mononucleosis, J. Clin. Investigation **13**: 419-435 (May) 1934.

6. Eagle, Harry: Studies in the Serology of Syphilis: VIII. A New Flocculation Test for the Serum Diagnosis of Syphilis, J. Lab. & Clin. Med. **17**: 787-791 (May) 1932.

7. Hatz, Bernard: The Wassermann Reaction in Infectious Mononucleosis with Report of a Case with Unusual Clinical Features, Am. J. Clin. Path. **8**: 39-45 (Jan.) 1938.

8. Bernstein, Alan: False Positive Wassermann Reactions in Infectious Mononucleosis, Am. J. M. Sc. **196**: 79 (July) 1938.

On admission the case was first regarded as one of German measles in that the cutaneous eruption, enlargement of the posterior cervical nodes and leukopenia seemed compatible with this diagnosis. But the presence of sheep cell agglutinins in high titer, the blood picture of January 10 and the fact that eruptions similar to this type are known to occur in infectious mononucleosis [9] all pointed to the latter diagnosis rather than to that of German measles.

It is important to note that without the proper blood studies one would have seriously considered secondary syphilis in this case and might have begun immediate intravenous antisyphilitic therapy.

COMMENT

There are several unusual features in this case, namely the high and persistent titer for heterophile antibodies, the atypical clinical picture of infectious mononucleosis simulating German measles and the relatively long duration of the false positive Kahn and Wassermann reactions.

A titer of 1:4,096 for heterophile antibodies is higher than one ordinarily finds in infectious mononucleosis, and whether or not there is any relation between this and false positive Wassermann reactions is not clear. Bernstein [8] has observed a sheep cell titer of 1:33,000 in a patient whose serologic reaction was negative while on the other hand in one of his cases presenting both positive Eagle and Wassermann reactions the sheep cell titer was only 1:64. In addition, the heterophile antibodies in Hatz's case [7] never rose above a titer of 1:32.

Apparently, false positive serologic reactions for syphilis may appear in infectious mononucleosis as early as the first week of disease. They usually revert to negative some time during the third to the seventh week, though in the present case they did not become negative until the tenth week. The heterophile antibodies still persisted in high dilution even at this time, thus failing to show a parallelism with the course of the Wassermann reaction.

There has been no adequate explanation advanced for the cause or nature of the false positive reactions, and it is a phenomenon which deserves further investigation in view of the fact that one is dealing with a disease of unknown etiology. Partial removal of heterophile antibodies has no effect on the tests for syphilis, nor do the sheep cell titers necessarily parallel these tests.

It is also unknown whether cases of infectious mononucleosis with falsely positive Wassermann reactions fall into a special group, or, if not, how frequently they occur in the general run of infectious mononucleosis. In Gooding's group of cases from the London epidemic of 1930 the incidence was over 60 per cent. In Bernstein's series [8] of sporadic cases the incidence of transiently positive Wassermann reactions was 16 per cent.

During the past seventeen years at the New Haven Hospital there have been observed forty-six admissions in which the diagnosis of infectious mononucleosis has been made. In thirty-seven of these cases either Kahn or Wassermann tests were done, with the result that three of these, including the present case, yielded positive results. Of the other two patients the first was a girl aged 8 years who was admitted on the eleventh day of disease. At that time the Wassermann reaction was negative with the alcoholic antigen but 1 plus with the cholesterinized antigen. The second patient was a college student aged 20, admitted on the seventeenth day of illness. He had as a complication a severe Vincent's stomatitis. On the day of admission the Kahn reaction was 2+, the Wassermann reaction was negative with both the alcoholic and the cholesterinized antigen, and the sheep cell agglutination titer was 1:128. Unfortunately there is no record of serologic tests having been repeated in either of these first two cases. It seems reasonable to suppose, however, that in both instances the mechanism of the positive tests may have been similar to that observed in the third case, since no history of syphilis was obtained in either case and no congenital stigmas were present. If one considers that these three cases are similar, the present incidence of transiently (?) positive tests for syphilis in the series of cases at the New Haven Hospital is approximately 8 per cent, as contrasted with Bernstein's incidence of 16 per cent and Gooding's incidence of over 60 per cent. It should be emphasized, however, first that routine Wassermann tests were not done in our whole series; secondly, that serologic tests for syphilis were not repeatedly carried out, and, thirdly, that Kahn tests were usually done on admission during the very early stages of the disease. It seems possible, therefore, that more patients with positive reactions for syphilis might have been observed if blood tests had been repeated during the subsequent course of the illnesses described.

Blood Counts, Sheep Cell Agglutinations, Kahn and Wassermann Reactions

Date	Day of Disease	White Blood Cells	Lymphocytes, per Cent	Sheep Cell Agglutinin Titer	Kahn Reaction	Wassermann Reaction	
						Alcoholic	Cholesterinized
1/10/38	13	6,050	65	1:512	4+	—	4+
1/12/38	15	7,300	53				
1/15/38	18	4,500	47	1:4,096	4+	—	4+
1/22/38	25	.....	..	1:2,048			
2/ 5/38	39	.....	..	1:512	2+	—	4+
2/11/38	45	7,050	28	1:512	1+	—	—
2/19/38	53	.....	..	1:512	1+	—	2+
3/ 5/38	70	.....	..	1:256	—	—	—
4/ 5/38	101	.....	..	1:256	—	—	—

Capsule Formation and Virulence.—A characteristic of certain species and strains of bacteria which may well be regarded in some cases as a manifestation of adaptation to parasitic existence, as probably was first suggested by Babes, consists in the formation of a capsule. This structure in such organisms as the various types of pneumococci and Friedländer bacilli appears to be composed of various kinds of complex carbohydrate gums. That produced by the anthrax bacilli is described by Tomcsik as a protein or protein-like substance. It extends about the somatic portion of the bacterium and can be sharply differentiated from this vegetative body by suitable staining procedures. The experiments of Danysz were among the first to indicate a definite relationship between the formation of a capsule and virulence in pathogenic bacteria, and many subsequent studies have in the main served to establish this structure as being of great significance in permitting the survival of the bacterium in vivo. Its presence, nevertheless, cannot be taken as an infallible sign of an organism's capacity to cause disease, since a number of harmless encapsulated saprophytes are known.—Zinsser, Hans; Enders, John F., and Fothergill, LeRoy D.: Immunity Principles and Application in Medicine and Public Health, New York, Macmillan Company, 1939.

9. Tidy, H. L.: Glandular Fever and Infectious Mononucleosis, Lancet 2:180-186 (July 28), 236-240 (Aug. 4) 1934.

VERTEBRAL FRACTURES PRODUCED BY METRAZOL-INDUCED CONVULSIONS

IN THE TREATMENT OF PSYCHIATRIC DISORDERS

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Convulsions induced by metrazol have been widely applied in the past few years in the treatment of mental disorders. At first limited to the treatment of schizophrenia, this therapy is now being employed for the affective disorders [1] and also for severe psychoneuroses.[2] Von Meduna [3] in one of his early papers stated that, although the treatment was quite drastic, no inherent danger was involved. Occasional fractures of the long bones and dislocations have been reported.[4] Recently

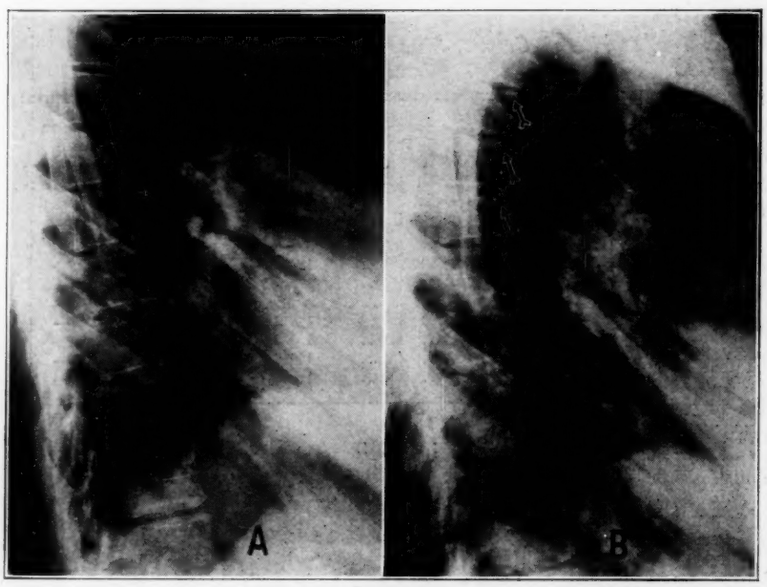

Fig. 1 (case 31).—*A*, taken before the convulsion, reveals no abnormalities, *B*, taken after the convulsion reveals compression fractures of the fourth and sixth thoracic vertebrae and possible injury to the fifth.

von Meduna and Friedman [5] compiled statistics from various sources with regard to the "mechanical" complications, which include dislocations and fractures of the extremities. They did not include the numerous temporomandibular dislocations which undoubtedly occur but which are reduced without difficulty or sequelae. They reported an incidence of 1.1 per cent of such "mechanical" complications. A survey of the literature discloses no reference to vertebral injuries as the result of metrazol therapy except the recent report by Wespi [6] of a case of fracture of the seventh thoracic vertebra. It is our purpose to report a series of cases of treatment with metrazol in which compression fractures of the thoracic vertebrae were found in a very large percentage after the convulsions.

Attention was attracted to the spine when several patients complained of more or less severe backache, localized chiefly to the midthoracic region, after the convulsions. X-ray examination of the spine disclosed compression fractures of the bodies of the vertebrae. Therefore all available patients who had received metrazol therapy, whether they had complained of backache or not, were examined by means of roentgenograms. Recently, in order to eliminate the possibility that the fracture may have existed prior to treatment, we have in several instances examined the spine before treatment and found it normal, whereas after the convulsions fractures were demonstrated by roentgenograms.

Convulsions induced by metrazol were utilized in the treatment of fifty-eight psychiatric patients, twenty-three males and thirty-five females. Of these, fifty-one (twenty males and thirty-one females) were available for examination. The youngest patient treated was 15 and the oldest 50, the average age for the entire group being 28.7 years. Fractures were found in a total of twenty-two (43.1 per cent) of the patients examined, of whom six were males (30 per cent) and sixteen females (51.6 per cent). The fractures were all found in the thoracic vertebrae and were most common in the midthoracic region. The number of segments affected varied from one to eight and averaged between three and four. Table 1 lists in detail the observations in the fifty-eight cases and includes the mental diagnoses and the number of metrazol convulsions. Table 2 summarizes the results of the x-ray examinations.

REPORT OF CASES

CASE 31.—C. G., a white woman aged 28, single, admitted to the Psychiatric Institute Dec. 16, 1938, with a manic-depressive psychosis, depressed type, of three months' duration, was well nourished, of asthenic habitus and normal on physical and laboratory examination. Roentgenograms of the thoracic part of the spine Jan. 10, 1939, showed no bone or joint abnormalities. January 11 the injection of 3 cc. of 10 per cent solution of metrazol, followed fifteen minutes later by 4 cc., produced only petit mal attacks. January 13 the injection of 5 cc. followed fifteen minutes later by another 5 cc. produced only petit mal attacks. January 15, 6 cc. elicited only a petit mal attack. January 18, 7 cc. produced a generalized convulsion resembling an epileptiform attack. Later that day the patient complained of moderate pain in the midthoracic region of the back. Stereoscopic x-ray films of the thoracic part of the spine taken the same day showed compression fractures of the bodies of the fourth and sixth thoracic vertebrae and suggestive but less convincing evidence of an injury to the fifth (fig. 1).

CASE 32.—G. L., a white woman aged 28, single, admitted to the Psychiatric Institute Nov. 16, 1938, with a manic-depressive psychosis, depressed type, of six months' duration, was well nourished, of pyknic habitus and normal on physical and laboratory examination. Roentgenograms of the thoracic and upper lumbar parts of the spine Jan. 10, 1939, revealed no bone or joint abnormalities. January 11 the injection of 4 cc. of a 10 per cent solution of metrazol produced a generalized

From the New York State Psychiatric Institute and Hospital and Columbia University College of Physicians and Surgeons.

1. Young, R. H., and Young, G. A.: Treatment of the Psychoses with Induced Hypoglycemia and Convulsions, J. A. M. A. **112**: 496-499 (Feb. 11) 1939.
2. Low, A. A.; Sonenthal, I. R.; Blaurock, M. F.; Kaplan, Maurice, and Sherman, Irene: Metrazol Shock Treatment of the "Functional" Psychoses, Arch. Neurol. & Psychiat. **39**: 717-736 (April) 1938.
3. von Meduna, Laszlo: Die Konvulsionstherapie der Schizophrenie, Psychiat.-Neurol. Wchnschr. **37**: 317-319 (July 6) 1935.
4. Beckenstein, Nathan: Results of Metrazol Therapy in Schizophrenia, Psychiatric Quart. **13**: 106-113 (Jan.) 1939. Winkelman, N. W.: Metrazol Treatment in Schizophrenia, Am. J. Psychiat. **95**: 303-316 (Sept.) 1938.
5. von Meduna, Laszlo, and Friedman, Emerick: The Convulsive-Irritative Therapy of the Psychoses, J. A. M. A. **112**: 501-509 (Feb. 11) 1939.
6. Wespi, Hans: Ein Fall von spontaner Wirbelfraktur im Cardiozolanfall, Schweiz. Arch. f. Neurol. u. Psychiat. **42**: 404-406, 1938.

epileptoid convulsion, which was repeated January 13 with the same dose. Later that day the patient complained of moderate pain in the midthoracic region of the back. Stereoscopic x-ray films of the thoracic part of the spine taken the same day showed evidence of compression fractures of the fifth, sixth, seventh, eighth and ninth thoracic vertebrae.

COMMENT

The technic of administering metrazol to induce convulsions in these patients was only slightly modified from that described by Meduna,[3] in that a smaller initial dose (3 cc. or, rarely, 4 cc. of a 10 per cent solution) than the 5 cc. advocated by him was given intravenously. The majority of convulsions occurred with a dose of from 4 to 6 cc. Later in our treatment, if a convulsion was not produced another injection of 1 cc. more than the original amount was given in fifteen minutes. If this did not elicit a grand mal attack, treatment was discontinued for that day. A similar procedure was used on subsequent treatment days, the dose being increased 1 cc. until a convulsion was attained. Treatments were given twice or, more often, three times weekly. The maximum dose of metrazol used was 11.5 cc. We wish to emphasize that none of our patients received any injury from external causes, such as falling out of bed or striking the body against the wall or the headboards or footboards of the bed during a convulsion. The patients were under constant observation until they were fully conscious and in complete contact with their surroundings. This procedure is similar to that recently advocated by Meduna and Friedman.[5]

We have found that the pattern of the convulsion induced by metrazol is similar to that described by Finkelman, Steinberg and Liebert.[7] In general, from five to ten seconds after the intravenous injection of metrazol, convulsive movements began in the face, shoulders and arms; these were followed quickly by a rhythmic clonic phase. In about fifteen seconds a tonic phase ensued. The head was retracted and the body was held rigid. This phase lasted from five to thirty seconds and was followed by another clonic phase, during which the spine was repeatedly flexed. It is possible that the vertebral injuries occur during this phase of the convulsion.

TABLE 1.—*Vertebral Fractures Following Metrazol-Induced Convulsions in Psychiatric Patients*

Case No.	Name	Age	Diagnosis	X-Ray Report*	Backache	No. of Convulsions	Maximum Dose of Metrazol, Cc.
			Female Patients				
1	S. B.	30	Manic-depressive psychosis; agitated, depressed	No fracture	None	3	5
2	G. C.	17	Schizophrenia	T6-7-8	None	19	7
3	L. C.	25	Schizophrenia	T7-8	Mild	3	4
4	D. C.	26	Schizophrenia	Not available for x-ray examination	None	23	6
5	A. C.	43	Manic-depressive psychosis; depressed	No fracture	Mild	5	7.5
6	R. D.	30	Psychoneurosis; anxiety and depression	No fracture	Mild	5	6
7	F. E.	43	Involution melancholia	No fracture	Moderate	18	6
8	B. F.	30	Schizophrenia	Not available for x-ray examination	Moderate	3	5
9	M. G.	17	Schizophrenia	No fracture	Mild	5	7
10	C. G.	27	Agitation and depression with schizophrenic features	T4-5-6-7-8	Severe	6	7
11	L. G.	26	Schizophrenia	No fracture	Severe	15	8
12	B. H.	30	Schizophrenia	Not available for x-ray examination	Moderate	14	7
13	M. J.	27	Manic-depressive psychosis; depressed	T7-8	None	4	7
14	M. K.	18	Manic-depressive psychosis; depressed	T5-6-7-8	Moderate	2	4
15	D. K.	22	Schizophrenia	No fracture	None	22	8.5
16	R. L.	24	Schizophrenia	T5-6-7-8-9	Moderate	25	10.5
17	M. M.	26	Schizophrenia	No fracture	None	12	6.5
18	M. M.	23	Schizophrenia	No fracture	None	12	4.5
19	H. O.	33	Manic-depressive psychosis; depressed	T6-7-8	Severe	1	3
20	J. Q.	33	Schizophrenia	T5-6-7-8-9-10-11-12	Moderate	6	7
21	A. R.	28	Manic-depressive psychosis; depressed	No fracture	None	2	3
22	D. R.	22	Schizophrenia	Not available for x-ray examination	Moderate	3	6
23	F. S.	41	Schizophrenia	T5-6-7-8	None	7	9
24	A. S.	27	Manic-depressive psychosis; depressed	T6-7-8	None	7	5
25	Y. S.	22	Manic-depressive psychosis; agitated, depressed	T5-6-9	Severe	21	7
26	B. S.	18	Schizophrenia	T4-5-6-7-8	Severe	21	6.5
27	F. S.	38	Manic-depressive psychosis; depressed	No fracture	None	3	5
28	M. W.	36	Manic-depressive psychosis; depressed	No fracture	None	1	4
29	T. W.	32	Schizophrenia	T5-6-7-8-9	Severe	10	5
30	L. W.	19	Schizophrenia	T4-5-6-7	Mild	13	5
31	C. G.	28	Manic-depressive psychosis; depressed	T4-5-6†	Moderate	1	7
32	G. L.	28	Manic-depressive psychosis; depressed	T5-6-7-8-9†	Moderate	2	4
33	E. W.	33	Manic-depressive psychosis; depressed	No fracture†	None	3	4.5
34	E. W.	28	Schizophrenia	No fracture	None	16	6
35	A. S.	20	Schizophrenia	No fracture	None	20	6.5
			Male Patients				
36	C. P.	50	Involution melancholia	No fracture	Mild	4	10
37	H. J.	30	Schizophrenia	No fracture	None	16	7
38	I. C.	24	Manic-depressive psychosis; depressed	T6	None	8	7
39	L. S.	20	Psychoneurosis; obsessive-compulsive	No fracture	None	9	8
40	S. M.	21	Schizophrenia	T5-6-7-8-9	None	10	6
41	E. K.	32	Depression	No fracture	None	11	8
42	E. P.	21	Psychoneurosis; anxiety and depression	No fracture	None	1	5
43	E. J.	32	Schizophrenia	No fracture	None	12	11
44	E. B.	37	Psychoneurosis; obsession and depression	No fracture	None	1	5
45	A. F.	34	Schizophrenia	No fracture	None	9	6
46	A. S.	15	Schizophrenia	Not available for x-ray examination	Mild	5	8
47	S. N.	40	Manic-depressive psychosis; depressed	T5-6-7	None	6	7
48	W. P.	24	Psychoneurosis; obsession and depression	No fracture	None	0	7
49	H. B.	36	Psychoneurosis; obsession and depression	No fracture	None	0	7
50	N. S.	21	Manic-depressive psychosis; circular	No fracture	None	10	5
51	M. P.	22	Schizophrenia	No fracture	None	15	8
52	C. P.	31	Schizophrenia	Not available for x-ray examination	None	22	11.5
53	H. K.	24	Schizophrenia	No fracture	None	14	5
54	B. S.	33	Schizophrenia	T7-8-9	None	5	10
55	H. M.	22	Schizophrenia	No fracture	None	8	9
56	M. H.	43	Manic-depressive psychosis; depressed	T3-4-5-6	None	7	9.5
57	E. A.	40	Manic-depressive psychosis; depressed	T4	None	9	5
58	H. C.	41	Involution melancholia	Not available for x-ray examination	None	6	11

* The letter T and the number represent a compression fracture of the corresponding thoracic vertebra.
† A roentgenogram taken prior to metrazol therapy revealed no fracture.

7. Finkelman, Isidore; Steinberg, D. L., and Liebert, Erich: Treatment of Schizophrenia with Metrazol by Production of Convulsions, J. A. M. A. **110:** 706-709 (March 5) 1938.

In our series there was no relationship between the total number of convulsions and the appearance of the fractures or the number of vertebrae affected. Several patients sustained fractures after one or two convulsions, while others showed no evidence of injury after eighteen or twenty-two seizures.

TABLE 2.—*Summary of Vertebral Fractures in Metrazol-Treated Patients*

	Male	Female	Total
No. of patients treated	23	35	58
No. of patients examined roentgenographically	20	31	51
No. of patients with vertebral fractures	6	16	22
Percentage of patients with vertebral fractures	30.0	51.6	43.1

In order to indicate that in all probability these fractures did not result as a consequence of any peculiarity in our technic or dosage, we wish to cite a case recently observed at this hospital but not included in our series. The patient had had two metrazol-induced convulsions at another institution. On his admission to the Psychiatric Institute, compression fractures of the seventh, eighth, ninth and tenth thoracic vertebrae were found on the roentgenograms.

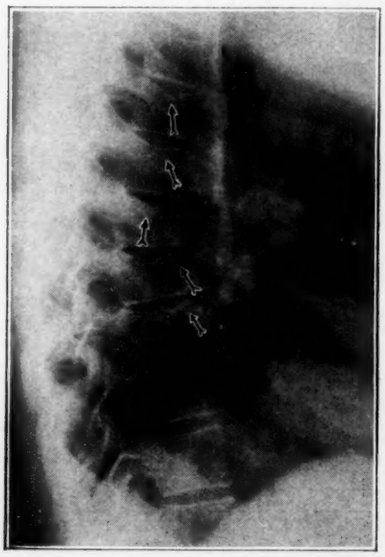

Fig. 2 (case 26).—A white girl aged 18, with schizophrenia, had twenty-one metrazol-induced convulsions. A roentgenogram then revealed compression fractures of the fourth, fifth, sixth, seventh and eighth thoracic vertebrae.

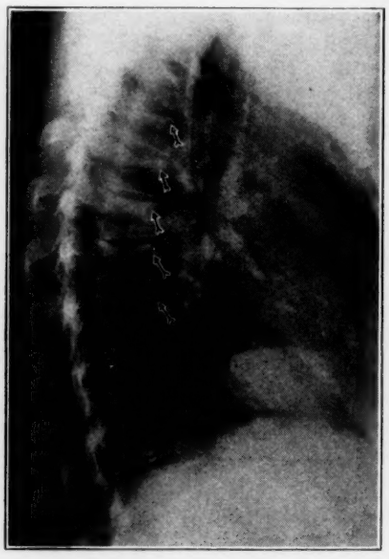

Fig. 3 (case 29).—A white woman aged 32, with schizophrenia, had ten metrazol-induced convulsions. A roentgenogram then revealed compression fractures of the fifth, sixth, seventh, eighth and ninth thoracic vertebrae.

Fig. 4 (case 19).—A white woman aged 33, with a manic-depressive psychosis of the depressed type, had one metrazol-induced convulsion. A roentgenogram then revealed compression fractures of the sixth, seventh and eighth thoracic vertebrae.

In general the degree of injury bore no relationship to the intensity of the subjective complaint of backache. Many patients who complained of pain in the back did not present any demonstrable vertebral fractures, whereas others with fractures, especially male patients, did not complain of pain. There did not appear to be any direct relationship between the occurrence of fracture and the habitus or age of the patient. All our patients were physically healthy and well nourished, stemming from the middle class of society, and showed no evidence of nutritional disturbance.

The most frequently affected segments were in the midthoracic region. In the roentgenograms, the appearance of the fractures varied. Fragmentation and compression of the anterior portion of the upper surface of the body was most common. In about half the cases the fractures manifested themselves only by a slight forward displacement of a disklike fragment of the upper portion of the body. Flattening in the vertical direction and wedge formation were often seen. In several instances the compression of the body was marked, resulting in a shortening of the vertical diameter to about one half its normal height. Moderate kyphosis and scoliosis were noted in a number of cases as a concomitant deformity.

The fractures of the bodies of the vertebrae were probably caused by the action of the muscles of the spine and trunk. The preponderance of fractures of the anterior portions of the vertebral bodies suggests that they are produced by sudden anterior flexion of the spine. Similar fractures after the spasms of tetanus have previously been reported.[8] Roberg [9] called attention to the bending force of the powerful spinal flexors and the relatively weak opposing extensors in producing compression fractures of the anterior portions of the midthoracic vertebrae in tetanus.

Although the complication of vertebral fracture is serious, our observations tend to agree with the published reports of the efficacy of metrazol therapy in the treatment of psychiatric disorders. To prevent this complication, we are investigating a method whereby the patient is placed on his side and acutely flexed, the metrazol being injected while he is in this position. It is hoped thereby to reduce the sudden flexions of the spine which may be the cause of the vertebral injuries. We have had too few patients treated in this new position to report regarding its effectiveness.

SUMMARY AND CONCLUSIONS

1. In fifty-one cases of psychiatric disorders in which metrazol was used to produce convulsions, x-ray examinations of the thoracic part of the spine were subsequently performed.

2. These examinations revealed compression fractures of the vertebrae in 43.1 per cent of the cases. The incidence was higher in female patients than in male.

3. In most instances the fractures were multiple.

8. Chasin, Adib: Ueber Veränderungen in der Wirbelsäule nach Tetanus, Fortschr. a. d. Geb. d. Röntgenstrahlen **46:** 427-441 (Oct.) 1932. Zukschwerdt, L., and Axtmann, R.: Wirbelveränderungen nach Wundstarrkrampf, Deutsche Ztschr. f. Chir. **238:** 627-634, 1933.

9. Roberg, O. T., Jr.: Spinal Deformity Following Tetanus and Its Relation to Juvenile Kyphosis, J. Bone & Joint Surg. **19:** 603-629 (July) 1937.

4. It is probable that these fractures are produced by acute anterior flexion of the spine, which occurs during the convulsion induced by metrazol.

5. In view of the beneficial effects of metrazol in the therapy of mental diseases, attempts are being made to avoid this complication.

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Clinical Notes, Suggestions and New Instruments

PURPURA HAEMORRHAGICA FOLLOWING USE OF SEDORMID

TWO ATTACKS IN ONE PERSON

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Cases of purpura haemorrhagica after the use of sedormid (allyl-isopropyl-acetyl-carbamide) have been reported with increasing frequency since 1933. Joekes [1] reviewed the literature on this subject and stated that there were to date thirty-seven reported cases of purpura haemorrhagica due to sedormid. Since the period covered by his recent survey, seven more cases have been added to the literature.[2] It is interesting to note that on March 5, 1938, the Council on Pharmacy and Chemistry of the American Medical Association [3] declared sedormid not acceptable for New and Nonofficial Remedies. Also of the twenty recorded observers, only four are Americans.[4] In view of this we feel that it might be pertinent to describe a recent case of severe purpura haemorrhagica with two separate episodes due to this sedative.

REPORT OF CASE

A white woman aged 57 complained of multiple subcutaneous hemorrhages, which she had noticed on finishing her housework that evening. No injury had been sustained to account for the condition. Her legs, thighs, arms, body and mouth had hundreds of hemorrhages ranging in size from petechial spots to areas 6 cm. in diameter. Many of these larger areas were raised from 2 to 3 mm. in height; none were painful when touched. The hemorrhages in the mucous membrane of the mouth were of two varieties, some being flat and others pedunculated. The heart and lungs were normal; the abdomen, liver and spleen were not palpable. A capillary fragility test [5] produced 100 petechial hemorrhages in five minutes, and the entire forearm and hand became hemorrhagic. The clinical impression was of aplastic anemia, scurvy or idiopathic purpura.

When she was hospitalized early the next morning the areas had increased in size, a large hematoma was present on one elbow and she was spitting blood. A vitamin C saturation test [6] gave a normal result, 625 mg. (of 1,000 mg. given intravenously) being excreted in five hours. X-ray studies of the extremities for evidence of subperiosteal hemorrhages gave negative results.

No new hemorrhages appeared after her entrance into the hospital, which was concomitant with the large dose of vitamin C. Since she had shown a general avitaminosis a year before and because she had a habit of taking sedatives for insomnia, the possibility suggested itself that the excretion of dietary vitamin C had been accelerated by some drug (actylsalicylic acid, for one, has been reported to cause depletion of vitamin C reserves [7]). For this reason 1,000 mg. of crystalline vitamin C (cebione-Merck) was given in 10 cc. of water intravenously each day. No other medication was administered. Studies of the blood made almost daily are presented in the table.

Questioning about self-prescribed medicine brought the information that the patient had taken one-half tablet of sedormid nightly for several months, with no ill effects. After a lapse of about a month she took a whole tablet the night before the onset of purpura. She recalled that she soon became acutely ill, with chills, fever and excessive thirst. A sleepless night was followed by a raging headache the next morning. Feeling better later, she had been astonished on changing her clothes in the evening to find her skin spotted with hemorrhages.

After a week's hospitalization, when her blood platelets had started to increase and her hemorrhages to disappear, the patient was discharged. Because sedormid was suspected of being the cause of her illness, it was not readministered for fear of recurrence.

Two months later she again took one-half tablet of sedormid at bedtime. Within two hours chills and fever were experienced, and her stomach "felt as if it were stretching." The next day her mouth was filled with hemorrhages, so that she was spitting blood continuously. There was oozing from the nose, and scattered over her body were approximately 300 petechial hemorrhages. Several large ecchymotic areas, all less than 2.5 cm. in diameter, appeared over the elbows and thighs. Two days later more hemorrhages appeared on the extremities. She was ashen colored and appeared ill. As she now refused intravenous injections, oral doses of 1,000 mg. of vitamin C were given daily. It required three weeks for the areas to disappear. At the present time, one month after the recurrence, she has residual stiffness of her knees, which may have been caused by hemorrhage into the joints.

Studies of the Blood

Day of Illness	1st	3d	4th	6th	7th
Red blood cells (per cubic millimeter)	3,760,000	4,236,000	3,870,000	3,990,000	4,250,000
White blood cells (per cubic millimeter)	4,900	3,750	3,350	3,850	4,150
Platelets (per cubic millimeter)	90,000	84,000	52,000	110,000	140,000
Hemoglobin, %	86	79	74	80	82
Color index	1.11	.86	.88	.96	.90
Bleeding time (minutes)	5	4	3	2 to 3	2½ to 3
Coagulation time (minutes)	6½	5½	5	4½	4½ to 5
Differential count (per 100):					
Neutrophils	62.5	36	47	36	38
Eosinophils	1.5	6	3	2	2
Basophils	2	0	0	0	1
Monocytes	2.5	4	5	5	6
Small lymphocytes	29.5	52	42	54	48
Large lymphocytes	2	2	3	3	5

COMMENT

While it is probable that many persons have suffered no ill effects from sedormid, a study of forty-five cases of purpura haemorrhagica following its use should cause real concern. The different stages at which illness may appear are of interest. Of the persons in whom purpuric manifestations developed, the majority indicated an allergotoxic reaction, since they had taken it for some time with no untoward effects, only to show hemorrhages when they resumed it after varied lapses of time. In another group apparently an intolerance for it developed, purpura appearing after a period of continued use. A still smaller number of persons who are reported to have reacted to their first dose seemed to have an idiosyncrasy for this drug. In all cases there was a strikingly similar clinical picture, followed generally by complete recovery on withdrawal of sedormid. In one instance, however, a psychosis was reported to have followed the disappearance of visible symptoms, and in the reported case

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there is residual stiffness of the knees. One is led to speculate, therefore, on the possibility of such serious manifestations as may result from lesions in the brain and other important areas.

CONCLUSION

Evidence accumulated by various authors over five years demonstrates that sedormid may cause a serious hemorrhagic syndrome. This emphasizes the need for further study of its properties, restriction of its sale except on a physician's prescription and caution on the part of the physician in recommending its use.

A SIGN OF ULNAR PALSY

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It seems to me worth while to point out the diagnostic importance of a sign of ulnar palsy that is apparently little known and is not even mentioned, for example, in the leading textbooks of neurology or in monographs on the peripheral nerves. This sign consists of a position of abduction assumed by the little finger. For years I have been observing this sign and have found it to be present in many cases, regardless of the cause of the palsy.[1]

Sometimes the fourth finger too has a tendency to assume a position of abduction, but usually it is only the little finger that is found in an abnormal position. In many cases this abduction was nearly extreme and resembled a paralytic contracture. It was found to be most conspicuous when the patient was asked to extend his fingers at the proximal joints. The importance of this sign has become increasingly evident from numerous experiences which indicate that this tendency of the little finger to be abducted may constitute an early (in some cases the first) and also a late sign of ulnar palsy.

It is my definite impression that from this point of view the sign deserves special attention. To illustrate this, the case of an intelligent female patient who had a slowly developing ulnar palsy is cited. This patient reported that the first thing she had noticed in respect to her hand was a tendency of the little finger to deviate outward. In other cases this deviation outward of the little finger has been noticed together with the beginning of paresthesias in the fourth and fifth fingers.

To show the importance of this sign as a very late manifestation of ulnar palsy, another case may be cited—that of a physician who fourteen years ago suffered a severe traumatic right-sided ulnar palsy. In the course of time all the signs of this palsy (atrophies, paralyses, sensory changes) completely subsided. In this case the abducted position of the little finger is now the only remaining demonstrable sign of an ulnar palsy sustained fourteen years ago. Recently I saw a patient who had been operated on for late ulnar palsy successfully by Dr. H. C. Naffziger fourteen years ago. In this case the position of abduction of the little finger has been the outstanding clinical feature.

From the physiologic standpoint this sign is easily understandable. Adduction of the little finger is performed by the interosseous and abduction by the hypothenar muscles. Both groups of muscles are innervated by the ulnar nerve. However, in abduction of the little finger, the musculus extensor digiti minimi proprius and the branch to the little finger of the musculus extensor digitorum communis also play a definite part. These are both innervated by the nervus radialis. If the muscles innervated by the ulnar nerve are weak, those innervated by the intact nervus radialis predominate in strength and abduct the little finger. Thus it is understandable why this abduction of the little finger in ulnar palsy is best seen when the musculus extensor digitorum communis comes into action and extends the fingers and the hand. In cases of combined palsy of the nervus ulnaris and nervus radialis this sign would not be present. Normally the spreading of the fingers and abduction of the little finger is much more forcefully performed with the fingers extended than with the fingers flexed. In ulnar palsy this difference is much more pronounced in the little finger. This proves again the importance of the extensors of the little finger in the mechanism of its abduction.

Borchardt[2] described a case of ulnar palsy in which he assumed that only the musculus abductor digiti quinti was preserved. Foerster cited this case as a proof that this muscle was innervated by the nervus medianus. Foerster[3] presented a photograph made in a case of disease of the nervus ulnaris in which there was marked abduction of the fifth finger. He stated that in this case all the muscles of the hand that normally are innervated by the nervus ulnaris were innervated by the nervus medianus, except for the musculus interosseus volaris tertius (adductor digiti quinti).

These two explanations of the phenomenon are based on the supposition that the median nerve in these cases innervated the muscles usually regarded as innervated by the nervus ulnaris. Aside from the fact that this must occur only exceptionally, such an explanation does not come into consideration in my cases, in which the picture was in every way typical and there was no other evidence of innervation by the nervus medianus as a substitute for the nervus ulnaris. There was typical involvement of all the muscles normally innervated by the nervus ulnaris.

In another case of abduction of the little finger in ulnar palsy Foerster[3] assumed that, after the ulnar nerve had been affected, all the muscles had been restored to normal except the musculus adductor digiti quinti. The isolated palsy of this muscle had thus led to an abducted position of the little finger. This explanation by Foerster seems to me a little far fetched, as it is not understandable how, after all of the other muscles controlled by the nervus ulnaris had been restored, one would remain affected for many years.

My explanation appears more simple and adequate. I assume that abduction of the little finger in ulnar palsy is due to the predominance of the musculus extensor digiti quinti and the branch of the musculus extensor digitorum communis to the little finger over the muscles innervated by the nervus ulnaris which adducts the finger. Thus it is not necessary to resort to the extraordinary supposition that in ulnar palsy only the adductor digiti quinti may be involved or fail to be restored, or that the abductor digiti quinti has been spared. My explanation is supported by the strong influence of the extensors of the fingers on their abduction in cases of slight ulnar palsy, the abduction of the little finger becoming more than usually enforced when the fingers are extended, i. e., when the extensors come into play.

With regard to the use of this sign in differential diagnosis, it is worth while mentioning that Hoff and Schilder[4] found, in cases of cerebellar disease and of beginning multiple sclerosis with cerebellar lesions, this same tendency of the little finger to abduction.

From the Division of Neurology of the University of California Medical School.

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USE OF SERUM TELLURITE AGAR FOR THE ISOLATION OF PNEUMOCOCCI

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Serum tellurite agar,[1] which is used as a routine in this laboratory for the examination of cultures taken from the throat and nose for Corynebacterium diphtheriae, has been found very satisfactory for the isolation of pneumococci.

On this medium practically all strains of pneumococci produce very characteristic colonies. The colonies, which vary in size from 0.1 to 1 mm. in diameter, are very thin and flat, entire and gray with a brownish gray center. Some give the appearance of having a raised edge and a depressed center. Recently isolated and virulent type III pneumococci produced large (from 3 to 4 mm.), raised, watery, mucoid, light gray colonies. While the morphologic appearance of the colonies of pneumococci on this medium is very much like that produced on ordinary blood

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1. Dissolve 1.5 per cent of granulated agar in beef infusion broth. Adjust hydrogen ion concentration between 7.2 and 7.4, bottle in convenient amounts without filtration and sterilize in the autoclave at 15 pounds pressure for twenty minutes. Melt this base in the Arnold sterilizer when ready to use and cool to 50 C. Add 5 per cent sterile human or hog serum, 0.2 per cent of dextrose from a sterile solution (2 cc. of a 10 per cent dextrose solution to 100 cc. of base) and 0.01 per cent of potassium tellurite (1 cc. of a 1 per cent sterile solution). Pour into Petri dishes.

agar, the pneumococcus colonies are easily distinguished from those of streptococci. The colonies are not always typical, however, until the plates have been incubated for twenty-four hours.

In general, streptococci produce raised, black colonies on serum tellurite agar. Certain strains of hemolytic streptococci which produce large mucoid colonies are difficult to distinguish from the colonies of type III pneumococci. The mucoid streptococcus colonies are, however, darker than pneumococcus colonies and do not usually have an entire edge. The tellurite medium has the added advantage that proteus-like and spore-forming bacteria do not produce spreading colonies.

This method has been found to facilitate greatly the routine isolation of pneumococci from mixed cultures.

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Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE. HOWARD A. CARTER, Secretary.

FEVER THERAPY BY PHYSICAL MEANS

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During the past few years, interest in the production of fever by physical means has greatly increased. More than 600 articles have been written and published on the subject. Excellent research work has been done, and conservative scientific conclusions have been drawn. The value of fever therapy as an important therapeutic agent in the treatment of certain diseases has been definitely proved.

The treatment of more than fifty diseases by means of artificial fever therapy has been attempted. The results in the majority of these diseases were not encouraging, although with a selected few the method has given promise of great usefulness. It must be emphasized, however, that fever therapy is probably of little or no value in the treatment of many diseases concerning which its use has been studied, and in some diseases it may even become dangerous.

GENERAL PRINCIPLES

Numerous studies on the effects of fever produced by physical means indicate that these effects produce certain definite changes in the body.

Effects on Circulation.—The pulse and circulatory rates are increased by fever therapy, and both the volume output of the heart and the velocity of the blood may be increased by as much as 400 per cent. There is an initial increase which is followed by a decrease in the pulse pressure. There is a marked increase in the pulse volume in the fingers of the patient in all types of artificial fever with the exception of that caused by foreign proteins. It has been suggested that the vasodilatation which occurs during fever produced by foreign protein is possibly of central origin, whereas that which occurs in artificial fever induced by external heating, with consequent prevention of loss of heat, is chiefly of peripheral origin.

The maximal increase of circulation in artificial fever occurs, in general, at temperatures between 103 and 104 F. (39.4 and 40 C.). Alterations appearing in the electrocardiogram are not uniform. The electrocardiograms show disappearance of the normal sinus arrhythmia, and the cardiac rhythm becomes remarkably regular. The conduction time (PR interval) is shortened about 0.02 to 0.06 second during the elevation of bodily temperature, being shortest at 105 F. The conduction rate concomitantly slows to its former velocity as the temperature falls.

Studies made by means of sphygmograms, phlebograms and electrocardiograms of patients undergoing fever treatments indicate that the total filling time of the ventricle is rapidly reduced by the time the temperature is elevated to 100.5 F. and reaches its lowest figure at 103.5 F. After this, the filling time increases slightly, so that it again becomes greater than the emptying time.

The curves illustrating filling times suggest that both the distressing symptoms and the subjective discomfort often experienced by patients during the induction of artificial fever might be accounted for by an inadequate filling of the heart because of an insufficient duration of the filling time. Compensation may be accounted for by a more adequate ventricular filling brought about by an increase in the duration of the filling time.

There is little or no change in the volume of the blood and no change in the viscosity of the blood when the intake of fluids is encouraged during the fever sessions. Artificial fever unaccompanied by sweating does not of itself bring about any considerable change in the blood volume, but when fever is accompanied by profuse perspiration, the reduction in blood plasma may be so great as to produce peripheral vascular collapse.

Absorption of fluids from the intestinal tract may be retarded during high fever, but the intravenous administration of fluids permits rapid restoration of blood volume. The visible capillaries of the nail beds are increased in number and size. The erythrocyte count generally is not changed. There is an initial decrease in the number of leukocytes, with a subsequent increase. There is a leukocytosis which starts during the fever period and rises in tidelike fashion with the addition of waves of neutrophilic cells and then gradually recedes to prefebrile levels in from twenty to twenty-four hours. This leukocytosis is varied, the total cell count ranging from 10,000 to 60,000.

Prolonging the fever, especially at high temperatures, delays leukocytosis or at least produces a smaller increase in leukocytes than does a shorter or less intense session of fever. It has been shown that continuous high fever in the rabbit prevents leukocytosis and may eventually lead to leukopenia. This action is explained by a progressive fall in the lobe index (number of nuclear lobes per hundred polymorphonuclear leukocytes), indicating that the bone marrow is pouring cells into the blood but is unable to keep pace with the emigration of these cells to the tissues.

Sessions of fever produce nuclear changes in the polymorphonuclear leukocytes, and these changes are in part toxic and in part the result of accelerated metabolic activity. There is a tendency to hypersegmentation and to the production of macropolycytes.

Bone marrow which has been previously stimulated but which is not being actively depleted by demands made by the tissues will respond to artificially induced fever by marked leukocytosis. Conversely, bone marrow which is being stimulated actively but which is also being drained by demands of the tissues will respond with only slight leukocytosis. This is illustrated by the slight response to the malarial paroxysm which

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occurs late in this disease. The same bone marrow, after a period of recuperation following quinine treatment, will respond by marked leukocytosis when subjected to artificial fever.

Histologic studies of organs of animals subjected to fever sessions continuously until death disclose focal accumulations of polymorphonuclear leukocytes which often reach the proportions of abscesses. In the lymph nodes there is early and progressive destruction of the lymphocytes followed by polymorphonuclear infiltration and later by a marked proliferation of actively phagocytic clasmatocytes. At this later stage, the nodes thus involved are hypoplastic without evidence of lymphocytic regeneration.

There is slight, if any, change in the nitrogenous constituents (urea, uric acid and creatinine) of the blood. There is a consistent increase in the clearance of the creatinine content, in contrast to wide variations of the clearance capacity which occur during infection. There is little or no change in the non-nitrogenous constituents, such as sugar, phosphorus, lipids and calcium, except, occasionally, for a slight increase, which in turn depends on an increase in concentration of the blood. There occurs no significant decrease in the lipids of the plasma such as is seen in the presence of acute infections. There is usually an alteration in the acid-base equilibrium of the blood which tends to produce slight alkalosis. Marked alkalosis may be noted. It has been concluded that fever characterized by severe dehydration and hyperventilation induces pronounced alkalosis. The degree of alkalosis which approaches critical levels is dependent on the severity of the dehydration and on the extent of hyperventilation. Opinions vary as to the effect on the hemal concentration of the chlorides. Some investigators claim that there may be a marked decrease in this concentration, whereas others declare that there is no significant change. If salt or a weak saline solution is administered by mouth during treatment, the hemal concentration of chlorides diminishes very little. If no sodium chloride is administered, profuse sweating and a diminished concentration of chlorides are to be expected. It has been noted that in seven cases the development of jaundice followed prolonged fever therapy. Two significant effects common to each case were found: (1) the increase in the icteric index was accompanied by a low value for the serum chloride and a diminished excretion of urinary chlorides and (2) the jaundice could be relieved only by the administration of large amounts of sodium chloride, and not by the administration of carbohydrates. Proper attention to the chloride and water balances "is apparently the most important factor in the technic of administering prolonged fevers." The oxygen content and oxygen-combining power of venous blood are increased. Opinions also vary as to the effect of artificial fever on the agglutinins of the blood, but the agglutination titer is generally within normal limits. The action of complement-fixing antibodies is temporarily diminished, but there is no change in the opsonic index. In studies on the effects of fever, great modifications in the antibodies of normal and syphilitic patients following fever were found. Studies made by means of a calorimeter on the mechanism of heat loss from the human body showed that "the mechanism for heat loss is adequate to care for twelve times the basal heat production" and that "spontaneous fever is due almost entirely to malfunction of the mechanism for heat loss."

Other Effects.—Examination of the effects of fever therapy on the gastric contents reveals a sudden decrease in the amount of chlorides and an increase in the amount of lactic acid. The urine is increased in amount, but temporary oliguria generally occurs. The reaction of the urine is unchanged, but the urine may be slightly alkaline and its specific gravity may be increased. The basal metabolic rate is increased approximately 7 per cent for each degree of fever induced. Cold fluids taken by mouth produce fluctuation in the gastric temperature but do not appreciably affect the general temperature. The comparison of the temperatures observed in the median antebrachial vein, rectum, uterine cervix, Hunter's canal, bladder and spinal canal indicate that records of the rectal temperature provide an accurate index to the temperature of the deep tissues. After each treatment there may be a temporary loss of weight as a result of loss of fluids unless sufficient fluids are taken by mouth, but this lost weight is quickly regained and after a course of fever therapy a patient usually retains his original weight or even gains weight.

PATHOLOGIC CHANGES

Hemorrhagic encephalitis and hemorrhagic pneumonitis have been noted in some instances in which extreme hyperpyrexia was induced. Deterioration of, and hemorrhage into, the cortex of the suprarenal gland may occur after induction of such hyperpyrexia. In the large viscera of laboratory subjects killed by hyperpyrexia there were found regions of focal degeneration and cloudy swelling. It has been observed that no demonstrable changes in nerve tissues occur in laboratory animals whose temperatures were elevated to 111.5 to 111.9 F. for from thirty-three to seventy-five minutes. Rabbits which were subjected until death to febrile temperatures not exceeding 108.3 F. were seen to have peripheral nerves characterized by degenerative changes of the reversible type. Intensity of the changes was directly proportional to the degree of febrile temperature induced in each animal. In rabbits subjected to intermittent periods of induced fever (during which the average bodily temperature varied between 106.1 and 107.8 F. for a total of from eighteen to fifty hours with one week of recovery time allowed between the last exposure and the time of killing) the peripheral nerves exhibited only mild intensities in the reversible types of degenerative change. If the bodily temperature of the animals was raised to 107.6 to 108.5 F. for eight hours and thirty days intervened between the time of exposure and the time of killing, the nerves showed a marked return to the normal status. Inferential evidence presented with this study indicated that regional anoxia was a contributing factor of considerable importance in the causation of the degenerative changes in the peripheral nerves observed after artificial fever.

At necropsy after death resulting from the induction of artificial fever, as observed in the experimental laboratory and elsewhere, pathologic lesions have been found which are similar to the lesions discovered at necropsy after death caused by the administration of nitrous oxide anesthetic. These lesions would seem to indicate that death may result from anoxia.

BACTERICIDAL EFFECTS

Neisseria gonorrhoeae is generally destroyed by a temperature of from 106 to 107 F. (41.1 to 41.6 C.) in from six to twenty-seven hours. In a high percentage of cases of syphilis, dark field illumination will

not reveal the presence of Spirochaeta pallida after the patient has been treated with fever induced by physical means. Mycobacterium tuberculosis, Streptococcus haemolyticus or Streptococcus mitior when exposed to temperatures within physiologic ranges in vitro show no cultural changes. Micrococcus catarrhalis, Haemophilus conjunctivitidis, Haemophilus influenzae, Brucella abortus, Escherichia coli, Eberthella typhosa, Streptococcus haemolyticus, Streptococcus viridans and Diplococcus pneumoniae (type I and type III) usually resist a temperature of 107 F. (41.6 C.) in vitro for twenty-four hours; an occasional strain shows some reduction in number.

DESCRIPTION OF APPARATUS

There are various devices for the production of artificial fever. The most common devices used at present are the air conditioned cabinets, luminous heat cabinets, air conditioned cabinets used in conjunction with short wave diathermy, electric blankets and zipper bags or blankets used in conjunction with short wave diathermy.

Air conditioned cabinets produce a rise in the bodily temperature by circulating hot, humid air over the body. Hyperpyrexia is produced by the heated air. The dry air temperature of these cabinets is usually maintained at between 110 and 130 F., and the humidity is maintained at as high a percentage as possible (from 80 to 95). These cabinets are heated by small radiant heaters similar to the units found in the household electric heater. The humidity may be maintained by a 1,000 to 2,000 watt immersion heater placed in a pan of water. The air is circulated by means of small fans. This type of cabinet can be used with entire satisfaction to produce artificial fever without the aid of a diathermy apparatus. Several such cabinets are on the market.

There is a luminous heat cabinet which is similar in its action to the air conditioned type except that it is heated by four or five 200 watt carbon filament bulbs situated in the top of the cabinet. It has a fan and humidifying pan with which to circulate and humidify the air. This type of cabinet can be constructed easily by any hospital carpenter for from $150 to $250.

Short wave diathermy machines have become very efficient in the production of artificial fever. The most satisfactory means of using short wave diathermy is to employ it in conjunction with an air conditioned cabinet. Fever is induced by means of the short wave electromagnetic cable or electrostatic plates; the bodily temperature is maintained by means of the air conditioned cabinet.

High frequency currents, short wave diathermy and, likewise, conventional diathermy can be used in conjunction with blanket packs or bags with slide fasteners. This procedure is satisfactory for administering short sessions of fever but is not satisfactory for the production of prolonged high fever. The blanket pack or the bag with slide fastener exerts an extremely confining effect on the patient, so that it is almost impossible for him to withstand many hours of fever. Various kinds of electric blankets, some of which are designed in the form of a large sleeping bag, have been constructed for use in fever therapy. They are less expensive than cabinets, but their great disadvantage is that the patients enveloped within them are closely confined. These blankets, if employed at all, should not be used when a temperature of more than 103 or 104 F. (39.4 or 40 C.) is required. None have yet been approved by the Council on Physical Therapy of the American Medical Association.

Hydrotherapeutic Methods.—The production of fever by means of hot baths is still being used successfully by some investigators. Although prolonged hot tub baths are enervating, they elevate the patient's temperature rather rapidly and may maintain it at a fairly high level for from one to two hours. After the fever has been induced by means of the bath it can be maintained by means of blankets or, better still, by means of a simple radiant heat cabinet.

The simple tub bath is as inexpensive and uncomplicated as any method of producing fever. It seems likely that as physicians continue their search for simpler and better methods of producing artificial fever by physical means, they will more frequently elevate the temperature by means of hot baths and maintain it with a radiant heat cabinet.

In administering the hot spray bath, the nude patient is placed in a cabinet in the supine position with his head protruding from one end, as if he were lying in an air conditioned or other type of heat cabinet. He is then sprayed with a series of very fine jets of nebulized hot water, the temperature of which is controlled by means of a thermostat. This spray cabinet will produce a rapid rise in bodily temperature if the temperature of the water can be maintained at the proper degree. One supposed advantage of this method is the fact that the thermostat can be switched immediately, thus releasing a momentary spray of cold water. The brief spray of cold water will exert a refreshing effect on the patient; at the same time, if the switch to the cold water is maintained for a brief time only, there will be an increase in the bodily temperature instead of a decrease. Apparently the momentary contraction of the peripheral capillaries caused by the cold spray drives the warm peripheral blood into the splanchnic regions, thus producing an additional and a more rapid increase in the systemic temperature. The chief detriment to the use of the spray cabinet is that the operator must depend on a general water supply as the source of heat, and it is rarely possible to obtain a constant flow of sufficiently hot water.

Other Conduction Methods.—A simple method of inducing hyperpyrexia by wrapping the patient in blankets and rubber sheeting has been used. With this method, no source of heat other than the natural heat of the body is utilized; however, four or five hours is necessary in which to elevate the bodily temperature to 104 F. (40 C.), which would seem to be an unnecessarily long period of discomfort before the required high temperature is achieved. If this method is to be used, it would seem expedient to use at least a few hot water bottles in the patient's wrapping in an attempt to induce the fever more rapidly.

In using the hot water bottle and blanket method, the patient is simply wrapped in a number of thick blankets and surrounded by a number of hot water bottles. The great disadvantage of any blanket method of inducing hyperpyrexia rests in the fact, as has been indicated, that nearly all patients are rendered extremely uncomfortable by the confinement of their limbs occasioned by the necessarily tight wrapping of so many heavy coverings.

PERSONNEL

A carefully trained team consisting of technicians and a physician is essential to the safe conduct of fever therapy. The personnel of the fever therapy depart-

ment is almost as important as the personnel of the operating room. A competent physician familiar with all the reactions which can be evoked by this type of therapy should be in attendance at all times during the treatment. The treatments should be administered by registered nurse-technicians who have been trained for at least one month or six weeks in a well organized fever therapy department of a hospital or under the close supervision of some person who has had such training. It has been said "The percentage of cooperative patients is directly related to the expertness and the tact of the nurse in charge." Failure to achieve a measure of success with fever therapy in many institutions arises from the fact that the attending nurses have not been adequately trained and familiar with the physiological principles that are essential to effective treatment. For many reasons the use of fever therapy should be confined to institutions. It must be borne in mind at all times that fever therapy is not without danger. Though it is entrusted to a corps of highly trained workers, serious complications can and do occur during its administration.

TECHNIC

Selection of Patients.—Emphasis cannot be laid too strongly on the need for careful selection of patients. The patient should be subjected to a careful physical examination before treatment, and if there is any degree of hypertension, cardiac disease or severe debility he should be rejected. Functional disorders of the heart need not contraindicate fever therapy, and under satisfactory control patients with diabetes may also be accepted. Pulmonary tuberculosis may not be a contraindication per se, but the associated respiratory involvement may prevent the satisfactory elevation to, and maintenance of, high temperature. Fever therapy is not contraindicated by the presence of subacute carditis or inactive rheumatic heart disease; on the contrary, it may be of benefit in such conditions. In general, it might be said that any contraindication to major surgical procedures is likewise a contraindication to this type of therapy.

Management of Patients During Treatment.—Fever therapy is not tolerated uniformly by all patients; as is the case with other types of therapy, toleration depends on the reactions of the individual patient. The average person should be told what to expect of the treatment, should be enlightened as to the various physical changes that will occur and should be informed that the treatment is severe but not intolerable. Persons who have no idea of what to expect during the fever treatment frequently become extremely nervous, so that they cannot be controlled for the desired length of time. There is a certain group of extremely nervous, easily excitable persons who will not tolerate the treatments.

The most common untoward results observed during fever therapy are headache, restlessness, nausea, vomiting, tetany and muscle cramps. Heat prostration may occur. Restlessness requires sedation, which may be repeated every two or three hours. There is considerable variance of opinion concerning the best sedative, but in the experience of most workers codeine, pantopon, dilaudid and morphine sulfate have been satisfactory. It has been contended that carbamide sedatives are more satisfactory for basic sedation than the barbituric acid group of drugs. The latter are respiratory depressants and may also increase the danger of hemorrhage and patchy necrosis of the central nervous system. Such hemorrhage and necrosis may be produced by anoxia which often exists during fever therapy or simply by the barbiturates when administered in toxic doses. Therefore, the combination of barbiturates and fever seems ill advised. It seems essential to keep the patient quiet but never in a state of narcosis sufficient to prevent his reacting to questioning. Nausea and vomiting may be controlled by intravenous injections of from 500 to 1,000 cc. of 5 per cent dextrose and 1 per cent sodium chloride in solution during the treatment. Tetany may be corrected readily by the intravenous injection of 10 cc. (approximately 2½ fluidrachms) of calcium gluconate. From a study of the metabolism of chloride and water it has been concluded that the maintenance at a high level of the patient's intake of fluid and sodium chloride is of the utmost importance. For the average six to ten hour period of fever treatment, a total intake of from 3,000 to 5,000 cc. (3 to 5 quarts) of fluid has been found effective. An intake of sodium chloride of at least 20 Gm. (approximately 5 drachms) will cover the chloride loss in perspiration for the average treatment. The maintenance of fluid and chlorides may be accomplished easily by having the patient drink from 3 to 6 liters of a solution of 0.3 or 0.6 per cent sodium chloride, iced, during the session of fever. The patient may also be allowed to drink sweetened tea, orange juice, lemonade and carbonated beverages. He should be instructed to ingest a meal rich in carbohydrates on the night before a fever treatment. In some cases an intravenous injection of from 500 to 1,000 cc. of a solution of 5 per cent dextrose in physiologic solution of sodium chloride should be made on the morning of treatment.

The skin of the patient should be observed frequently during treatment. The feet and legs may be protected by a covering of terry cloth placed in position at the beginning of the treatment. If a region of erythema appears on any part of the body, that region should be protected by a towel. If the erythema becomes more prominent, a cold cloth or a piece of ice may be applied. By observing such precautions and by elevating the patient's temperature gradually, one can prevent what might otherwise develop into severe burns.

When air conditioned cabinets are used, the dry air temperature should be maintained between 110 and 130 F. (43.3 and 54.4 C.) in association with high humidity and low air velocity. With this procedure, there is little necessity for covering the patient and burns of the skin are infrequent.

Episodes of delirium occur not infrequently during prolonged high fever. Delirium, unless it is violent, does not contraindicate continuance of the treatment.

There is usually an increased oxygen saturation of the venous blood during the early part of a fever session but later if there is circulatory failure there may be a severe anoxemia and anoxia. The factors producing this anoxia are increased temperature of the blood and the resulting increased demand for oxygen in the tissues and, in some instances, failure of circulation. Oxygen inhalation is an important factor during fever treatments. At one time oxygen tents were used over the heads of patients in fever cabinets in an attempt to increase the effectiveness of therapy, the assumption being that the high oxygen saturation of the blood thus obtained might be an important factor in the curative effect of the fever. With bodily temperatures of from 101.8 to 105.9 F. (38.8 to 41.1 C.), the oxygen content of the venous blood was observed to be considerably

elevated. When the bodily temperature was elevated and oxygen was also administered, the percentage oxygenation of the hemoglobin frequently was found to exceed 95; however, a clinical estimate of the procedure indicated that the combination of oxygen and fever was only slightly more effective against disease than was fever alone. It was decided, however, to consider the use of oxygen in conjunction with fever therapy only from the standpoint of additional safety to the patient. The oxygen tent was found cumbersome and difficult to use, because most patients objected seriously to being entirely enclosed. The use of nasal catheters has been suggested, as has also use of the so-called face tent.

More recently, use of one of the two types of the new Boothby-Lovelace-Bulbulian oxygen face masks has been found effective. The mask is laid lightly over the patient's nose and he is permitted to inhale oxygen at intervals during one half to three fourths of the entire treatment. The adjustment is so arranged as to permit a partial rebreathing and a partial admixture of atmospheric air. Patients do not object to this type of mask, because it is light, readily applied and easily lifted off at any moment to allow sponging of the face and administering of fluids by mouth. The intermittent administration of oxygen during all fever treatments is an important additional safety factor in the prevention of the dangerous after-effects of anoxia that have been so clearly described by a number of investigators.

There should be a well trained fever therapy nurse in constant attendance on the patient. At no time should she be more than a few feet away. The pulse rate, temperature and respiratory rate should be recorded every fifteen minutes for the first hour of therapy and every ten minutes thereafter. A careful record should be made of the amounts of fluid intake and also of the reactions of the patient. The temperature should be taken during the first hour by both mouth and rectum and thereafter by rectum exclusively. Electrical indicating thermometers are extremely convenient and satisfactory and their use allows the nurse-technician to give more attention to the patient. The blood pressure should be recorded every hour during the treatment. Any untoward reactions of the patient seen by the technician should be reported immediately to the physician in charge, who should be within calling distance at all times.

COMPLICATIONS

Mention already has been made of the reactions that may occur during a session of fever, such as headaches, nausea, vomiting, tetany and abdominal cramps. Nausea and vomiting also may be present during the evening after treatment, although they are usually relieved within twenty-four hours. Herpetic lesions on the lips and in the mouth, nose and pharynx may be so severe as to render eating and drinking difficult for a time. These lesions tend to disappear even though fever treatments are continued at regular intervals.

Occasionally superficial burns occur, especially on the arms and chest. However, these usually do not interfere with subsequent sessions of fever, and they can be avoided in practically all cases if the precautions previously mentioned are followed.

One of the most serious complications is circulatory collapse with a possibly fatal termination. Circulatory disturbance may occur during treatment in spite of the more careful antetherapeutic examination and even though the condition of the patient is apparently good during the treatment. In cases of circulatory collapse, the usually accepted treatment for shock is administered. Not only a rise of the temperature above safe physical limits but other serious consequences may be avoided by discontinuing treatment whenever any of the following conditions are found: (1) a systolic blood pressure of less than 80 mm. of mercury, (2) a pulse pressure of less than 20 mm. of mercury and (3) a pulse rate of 160 beats or more which is constant for more than thirty minutes. Often in the presence of these conditions cooling the patient momentarily may result in an improvement that will last throughout the treatment. It is now known that circulatory collapse occurring during fever therapy may be caused by the loss of fluids resulting from excessive perspiration. If the systolic blood pressure recedes below 80 mm. of mercury during the treatment, intravenous injection of from 500 to 1,000 cc. of physiologic solution of sodium chloride containing 5 per cent dextrose should be started at once. This is a most important safety measure; it will often permit continuation of treatment by replacing the lost fluids and by raising the blood pressure to within safe limits.

Another complication of a serious nature, infrequently encountered, is heat stroke. The patient's temperature rises suddenly to 107 F. (41.6 C.) or above. The pulse becomes hard, but its rate is not increased in proportion to the elevation of temperature. The blood pressure increases and coma and pulmonary edema may suddenly develop. The patient should be removed from the cabinet immediately and cooled by means of a tepid sponge bath and by a fan which blows cool air directly on the body. This procedure is considered preferable to the use of ice baths, which may contract the peripheral capillaries and lessen heat radiation. If pulmonary edema and apparent cerebral edema occur, the patient should receive a solution of hypertonic dextrose (50 per cent) by intravenous injection or a venesection should be done. The temperature may rise rapidly to 110 F. or more, with fatal results, or return to normal. If it returns to normal, care should be taken that the patient's condition does not proceed to a state of shock accompanied by a subnormal temperature.

THERAPEUTIC INDICATIONS

As is the case with many new therapeutic agents, artificial fever has been recommended for the treatment of a large number of diseases. As mentioned previously, it has been used for no less than fifty different ones. Space does not permit detailed consideration of the use of artificial fever produced by physical means in the treatment of all the conditions for which it has been recommended or used, which are as follows: adiposis dolorosa, allergic dermatitis, bronchial asthma, bronchiectasis, Buerger's disease, cerebral atrophy complicated by chronic otitis media, chorea, chronic sinusitis, dermatitis herpetiformis, epidemic encephalitis, epilepsy, infections of the gallbladder, gonorrheal arthritis, gonorrheal corneal ulcer, gonorrheal endocervicitis, gonorrheal epididymitis, gonorrheal prostatitis, gonorrheal salpingitis, gonorrheal urethritis, pelvic inflammatory disease, Hodgkin's disease, infectious arthritis, interstitial keratitis, subacute iritis, meningococcic septicemia, multiple sclerosis, mycosis fungoides, optic atrophy, osteogenic sarcoma, osteomyelitis, Parkinson's syndrome, peripheral vascular disease, psoriasis, psychoses, radiculitis, Raynaud's disease, rheumatic fever, sciatic neuritis, scleroderma, syphilis, syphilitic meningitis, ocular syphilis, syphilis of the nervous system, trichinosis, tumor and undulant fever.

It must be emphasized most strongly that fever therapy is probably of little or no value in the treatment of a number of these diseases. It would be distinctly dangerous to use fever therapy in some of the diseases for which it has been recommended. Among these may be mentioned: arteriosclerosis, subacute bacterial endocarditis, hepatic infections, pyelitis, staphylococcic septicemia and tuberculosis. Recent studies have added greatly to information on the treatment of some diseases by artificial fever; such studies should be consulted before artificial fever induced by physical means is employed to treat the disease in question.

Subacute Bacterial Endocarditis (Endocarditis Lenta).—It has been demonstrated definitely that, although there are some slight temporary relief of pain and a lowering of temperature following artificial fever therapy, no permanent beneficial effects can be noted after the hyperpyrexic treatment of patients having subacute bacterial endocarditis. Because of the presence of small vegetations of bacteria and fibrin on the endocardium, the marked increase in the velocity of the blood produced by fever therapy apparently increases the danger of embolism. Either cerebral or other embolism may occur. In addition it has been demonstrated that Streptococcus viridans is able to resist the highest temperature that the human body can tolerate. It is believed that any further attempts to use fever therapy for subacute bacterial endocarditis should be abandoned.

Bronchial Asthma.—Despite the fact that in a fairly large number of cases of intractable bronchial asthma fever therapy has brought about favorable results, it is felt that it should not be attempted in such cases unless all other means have failed. The results are frequently only temporary, and in some instances no improvement can be obtained. In no instance should fever therapy be attempted as an office procedure. It is the opinion of one investigator that hyperpyrexia of itself will be of only temporary, if indeed any, value but that when it is used in conjunction with other forms of treatment it is a most valuable adjunct.

Chorea.—The total number of cases of chorea treated by artificial fever induced by physical means is still too small to permit formation of any final conclusions. The studies do indicate, however, that the treatment of chorea by this method should be continued in well equipped institutions. Several investigators have found that choreiform movements cease in as many as 80 per cent of cases. Other investigators have reported more than 400 attacks of chorea for the alleviation of which the patients received fever therapy. Sixteen patients who had suffered from associated rheumatic carditis were also benefited. Comparative analyses of ninety-five cases in which the patients received fever therapy and of seventy-five in which they did not disclose a definitely lowered incidence of rheumatic manifestations among those patients who received fever therapy. Fever therapy was effective in cutting short an attack of chorea. The presence of associated active carditis was not a contraindication to its use; in fact, the carditis was perhaps benefited by it. The immediate results were excellent and recovery occurred in the majority of cases. The procedure of treatment for chorea has varied with different investigators, but in general it is believed that ten or twelve sessions of from two to three hours daily, with bodily temperatures maintained at from 104 to 105 F. (40 to 40.5 C.), form the procedure of choice. Some workers, however, have employed from four to six sessions, each of which was from five to eight hours in duration, maintaining the bodily temperatures between 104 and 105 F. (40 and 40.5 C.) and repeating these sessions every third or fourth day. Typhoid vaccine has been used with satisfactory results, the temperature being raised to 104 or 105 F. (40 or 40.5 C.) and maintained at a constant elevation for from five to six hours by means of a blanket pack. It is felt, however, that the fever therapy produced by physical means is more easily controlled and that children will accept and tolerate it more readily.

Gonorrhea.—The effects of artificial fever therapy produced by physical means on gonorrhea and its complications are conclusive. Reports by several investigators are available concerning the pyrexic treatment of gonorrhea in a large series of cases. More than 1,000 cases of gonorrhea treated by artificial fever induced by physical means have been recorded during the past five years. The percentage of remissions in the series of cases previously mentioned has been approximately 90. The rationale of the application of fever therapy to gonorrhea has been based of course on the thermolabile properties of the gonococcus.

When fever therapy was first used for gonorrhea, the patient's bodily temperatures were raised to from 106 to 107 F. (41.1 to 41.6 C.) and maintained at this level for six hours. The patient usually received from three to ten treatments, administered every third day. Later it was found that when gonorrheal infections were treated for periods equal to or slightly less than the thermal death time of the gonococcus, there was usually destruction of that organism. Many workers began to use fever sessions of long duration, the usual session being ten hours, maintaining the bodily temperatures at from 106 to 107 F. (41.1 to 41.6 C.). The duration of the treatment administered at 106.7 F. (41.5 C.) may be sufficient to equal 85 per cent of the thermal death time of the gonococcus and yet fail to result in a cure; on the other hand, treatment brief enough to equal only 10 per cent of the thermal death time occasionally results in a cure. The variation in effectiveness is probably influenced by the condition of the defense mechanism of the body. In the use of single fever sessions of ten hours' duration with bodily temperatures maintained at from 106 to 107 F. (41.1 to 41.6 C.), the results have been most satisfactory. In 94.6 per cent of ninety-nine cases there was remission after an average of 1.1 sessions, each ten hours in duration.

Since the introduction of sulfanilamide into therapeusis, the need for artificial fever in treating gonorrhea has become less; however, there remains a certain percentage of patients who cannot tolerate sulfanilamide or with whom sulfanilamide does not eradicate the disease. For these the combination of sulfanilamide and hyperpyrexia has proved most efficacious.

Gonorrheal Arthritis.—In most cases startlingly good results have been obtained with artificial fever in the treatment of gonorrreal arthritis. Most reports show that approximately 60 to 80 per cent of the patients become symptom free and that an additional 10 per cent are markedly improved; the other 10 per cent remain unimproved. The results are better when the treatment is instituted early in the course of the disease than when it is delayed until the disease has reached a chronic stage. The procedure used in the treatment of gonorrheal arthritis is the same as that for gonorrhea in general.

Other Gonorrheal Complications.—Gonorrheal ophthalmia has been shown to respond readily to fever induced by physical means, results revealing themselves in the form of subsidence of the inflammation, disappearance of the organism from the conjunctival tissues, acceleration of healing and a shortened stay in the hospital. Gonorrheal endocervicitis, gonorrheal prostatitis, gonorrheal salpingitis, gonorrheal pelvic inflammatory disease and gonorrheal endocarditis have been shown to respond favorably to prolonged high artificial fever. In the treatment of gonorrheal infections in the female, it has been found advantageous by some investigators to use local pelvic heating in conjunction with fever therapy. This may be done either by using vaginal applicators with which to heat the pelvis by a high frequency current or by using Elliott vaginal applicators with hot water as the thermal agent.

Infectious Arthritis.—About 30 per cent of one group of patients with infectious arthritis who were treated with artificial fever were significantly improved. The other 70 per cent exhibited little or no improvement. Fever sessions of short duration, during the course of which the bodily temperatures are elevated to from 101 to 103 F. (38.3 to 39.4 C.) by means of fever cabinets and hot baths, have been used; in conjunction with other corrective physical therapy they have appeared to be of benefit.

Meningococcic Septicemia.—Recoveries from this disease following the use of intense fever (of seven to ten hours in duration), with the temperature at 106.8 F. (41.5 C.), have been reported. Certain strains of meningococci were seen to exhibit a reduction in growth when they were maintained in culture at temperatures ranging from 40 to 42 C. (104 to 107.6 F.). Five strains were destroyed or greatly reduced in number within five hours or less. Fever therapy seems worthy of trial in selected cases of meningococcic infection.

Multiple Sclerosis.—The results of fever therapy in the treatment of multiple sclerosis for the most part have been unfavorable, although the number of cases reported is still too small to permit the formation of final conclusions.

Mycosis Fungoides.—After the induction of artificial fever by physical means, eight of ten patients having this disease were seen to obtain moderate improvement, an improvement, however, which apparently was only temporary.

Neuritis.—Low fever has been recommended as a safe and efficient means of treating neuritic and radicular pains.

Parkinson's Syndrome.—The use of artificial fever therapy for the condition causing this syndrome has not been particularly satisfactory. In seeking relief from this syndrome, it would probably be best to heed the statement "Fever therapy in the form of diathermy or malarial or bacterial injections seems to produce no permanent benefit. It may even do harm."

Rheumatic Fever.—It would seem that the treatment of rheumatic fever by artificial fever may sometimes be justified. After the use of artificial fever therapy in a small series of cases, patients often reported considerable relief of pain and swelling of the joints; there was a reduction in the leukocyte count and a decrease in the sedimentation rate of the erythrocytes.

In a comparative study of a small series of patients, some treated by means of artificial fever and some untreated, there was a striking reduction in the percentage of polyarthritis and also in the deaths from heart disease in the fever-treated group. Further analysis of the patients who had heart disease showed that the severity of the cardiac lesion was considerably greater in the untreated group; however, the two groups were small and the observation periods were not sufficiently long to warrant any final conclusion. The procedure used in the treatment of such patients usually consists of sessions of fever therapy four or five hours in duration with bodily temperatures maintained at from 104 to 105 F. (40 to 40.5 C.).

Syphilis (Early Primary).—Preliminary clinical investigations seem to indicate that, when artificial fever therapy is combined with chemotherapy, better results can be obtained than by the use of either form of therapy alone. However, in its present stage of development, fever therapy could not possibly be made available to the average patient having a primary syphilitic lesion. When the bodily temperature has been elevated to more than 105 F. (40.5 C.) for fifty hours in ten sessions of five hours each, this procedure being combined with thirty injections of an antisyphilitic chemical agent, cutaneous manifestations of the disease, including chancres, have been reported to respond with surprising promptness, so that no living, motile spirochetes can be found in any of the primary lesions after the first fever treatment. Progressive improvement in serologic reactions has appeared in the majority of cases. The results of treatment in control groups for which either fever therapy or chemotherapy was used indicated that neither of these methods alone was as effective as the combined procedure.

Dementia Paralytica.—The use of artificial fever produced by physical means in the treatment of dementia paralytica is becoming more and more extensive; however, there is still insufficient evidence available for the investigator to conclude that such fever will be more or less satisfactory than malarial fever. Most observers who have made careful comparative studies feel that fever produced by physical means offers a slightly higher percentage of immediate clinical remissions than does therapeutic malarial fever; however, it has been claimed by certain authorities in the field of syphilology that the relapse rate for physically induced fever will be higher than that for malarial fever. Certainly it will be several years before any final conclusions can be drawn; nevertheless, the best available comparative studies indicate that 70 per cent of patients with dementia paralytica who were treated with physically induced fever were immediately benefited by the treatment and that two years and eight months later 66.6 per cent of them remained improved; whereas, of a control group treated by malarial therapy, 63.3 per cent were improved immediately and two years and eight months later 56.6 per cent remained improved. These observations seem to indicate that the response of dementia paralytica to physically induced fever is apparently as well sustained as improvement brought about by therapeutic malaria. Much larger series of cases will have to be studied before final conclusions can be drawn.

Tabes Dorsalis.—It is generally agreed that patients with tabes dorsalis may be benefited by physically induced fever. Some investigators feel that tabetic pains and gastric crises respond more rapidly and with greater certainty to physically induced fever than to therapeutic malarial fever. Again it must be stressed

that the number of cases collected is not large enough to permit formation of any final conclusions. As additional evidence is collected, however, it becomes more apparent that physically induced fever may be of great value in the treatment of syphilis, particularly the tertiary manifestations of the disease.

Other Forms of Syphilis.—A number of investigators have reported encouraging results following the use of physically induced fever in the treatment of ocular syphilis, and there have been favorable reports also on the use of fever therapy for tabetic dementia paralytica, meningovascular syphilis and asymptomatic neurosyphilis.

Tuberculosis.—The study of the effect of fever therapy on dogs which had been subjected to experimental tuberculosis disclosed a temporary improvement, and as compared with that of control dogs, life was prolonged. Investigations, however, indicate that in the presence of tuberculosis, artificial fever therapy should be employed only with great care even in experimental studies. There is grave danger of doing harm to the patient if fever therapy is used for this disease. The study of this phase of the treatment of tuberculosis should for the present remain entirely in the hands of research workers.

Undulant Fever.—Several investigators have noted that in a small series of cases of undulant fever there has been a rather striking response to fever therapy. About 80 per cent of the patients treated exhibited definite clinical remissions with prompt disappearance of symptoms; however, the number of patients so treated is still insufficient to permit formation of final conclusions concerning the effectiveness of fever therapy. The procedure has been to administer five hour sessions of fever with bodily temperatures maintained at between 105 and 106 F. (40.5 and 41.1 C.); usually from one to three such treatments are necessary.

Conclusions with Respect to Diseases Treated.—Studies made to date seem to indicate that the chief sphere of usefulness of fever induced by physical means lies in the treatment of gonorrhea, both acute and chronic, and its complications. It would appear that artificial fever may be of value in the treatment of syphilis, particularly when it is combined with chemotherapy. While there is a suggestion that artificial fever produced by physical means may be helpful in the treatment of intractable bronchial asthma and in selected cases of chronic infectious arthritis, chorea and undulant fever, the clinical data are not sufficient to permit formation of any final conclusions. Its value in about forty other diseases remains to be proved. It seems to offer promise of considerable usefulness as a therapeutic agent.

CONCLUSIONS

Continued study has emphasized the fact stressed by the Council on Physical Therapy, namely that production of fever by physical means is strictly a hospital procedure, that it is essential that a well trained personnel be in complete charge of the work, that skilled nurse-technicians who have had at least one month's supervised training administer the treatments and that a physician be in constant attendance.

Patients to be treated by fever should be selected with as much care as those who are to undergo major surgical operations. The dangers that have been mentioned, embolism, hemorrhage and sudden death, are extremely rare when the administration of fever is in the hands of a competent, well organized group. However, it is to be expected that there will be a slight mortality resulting from a treatment that is as heroic as this one. If the treatments are given without proper control or are considered simple office procedures, there will be danger of harm to the patient or even death.

Opinions vary as to the best and safest means of producing fever. Almost any one of the methods described in this article may be used with the confidence that it will produce favorable results, provided the team of workers has developed a good technic for the particular method to be employed.

Council on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

CLAPP'S CHOPPED FOODS—SPINACH, GREEN BEANS, CARROTS, BEETS

Manufacturer.—Harold H. Clapp, Inc., Rochester, N. Y.

Description.—Canned chopped spinach, green beans, carrots and beets, respectively, slightly seasoned with salt. The vegetables are cut into small particles of relatively uniform size.

Manufacture.—These products are treated essentially according to the methods used in the preparation, canning and heat processing of canned strained vegetables. Each vegetable in the Clapp's Chopped Food line, however, is not strained but is passed through a chopping machine which consists of a series of circular knives rotating between grates. The size of the food particles produced is determined by the opening in the grates.

Analyses (submitted by manufacturer).—

	Spinach, %	Green Beans, %	Carrots, %	Beets, %
Moisture	93.9	91.1	92.8	91.5
Total solids	6.1	8.9	7.2	8.5
Ash	1.8	0.9	0.6	1.0
Sodium chloride (NaCl)	0.4	0.5	0.5	0.5
Fat (ether extract)	0.4	0.3	0.2	0.2
Protein (N×6.25)	1.4	1.6	0.7	1.0
Crude fiber	0.5	1.1	0.5	0.5
Carbohydrates other than crude fiber (by difference)	2.0	5.0	4.2	5.7

Calories.—Spinach 0.17 per gram, 5 per ounce. Green beans 0.3 per gram, 8 per ounce. Carrots 0.2 per gram, 6 per ounce. Beets 0.3 per gram, 8 per ounce.

Vitamins.—No evidence has been provided the Council as to the vitamin content of these products. The method of preparation and processing is designed to retain the natural vitamin values to the highest degree consistent with adequate and safe heating processes. Contact of the product with air during processing is avoided as far as possible.

Claims of Manufacturer.—These products are intended primarily for use in feeding infants who no longer require their vegetables to be strained or puréed.

CELLU BRAND BLACKBERRY JUICE

Distributor.—Chicago Dietetic Supply House, Inc., Chicago.

Description.—Canned blackberry juice packed without added sugar.

Manufacture.—Fully ripened blackberries on which no spray material has been used are carefully selected, washed, sorted, preheated and pressed through ordinary press cloth. The resulting juice is run into cans and the cans are sealed and heat processed.

Analysis (submitted by distributor).—Moisture 85.4%, total solids 14.6%, ash 0.4%, fat (ether extract) 0.6%, protein (N × 6.25) 0.1%, crude fiber 0.02%, carbohydrates other than crude fiber (by difference) 13.5%, invert sugar 12.7%, sucrose 0.1%.

Calories.—0.6 per gram; 17 per ounce.

MEDICAL LICENSURE STATISTICS FOR 1938

ANNUAL PRESENTATION OF LICENSURE STATISTICS BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

The Council on Medical Education and Hospitals of the American Medical Association presents herewith medical licensure statistics for the thirty-seventh consecutive year. The report covers the year 1938 and deals with statistics regarding (*a*) medical licensing boards of the United States, the District of Columbia, the territories and the possessions of the United States, (*b*) examining boards in medical specialties, (*c*) boards of examiners in the basic sciences, and (*d*) the National Board of Medical Examiners.

Official reports have been contributed by the medical licensing boards of all states, the District of Columbia, Alaska, the Canal Zone, Hawaii, Puerto Rico and the Virgin Islands; the homeopathic boards of Connecticut, Delaware, Louisiana and Maryland; the eclectic examining board in Arkansas; the twelve basic science boards in operation (Arizona, Arkansas, Colorado, Connecticut, the District of Columbia, Iowa, Minnesota, Nebraska, Oklahoma, Oregon, Washington and Wisconsin), the thirteen approved examining boards in the medical specialties and the National Board of Medical Examiners. The homeopathic board of Louisiana did not license any one during the year. Likewise no physicians were licensed in the Canal Zone.

The cooperation of the officers of the boards in supplying complete reports has made possible this annual compilation. The Council and THE JOURNAL wish to express thanks and appreciation to those who have supplied these data, for without their help such presentation would not have been possible.

Reports of all examinations and those licensed by endorsement of credentials are carefully compared with the lists of graduates furnished by medical school officials, so that errors in names of candidates, the medical school or the years of graduation are promptly corrected. In the occasional instance in which the applicant, according to the records, has not graduated or there is some irregularity, the state board is notified. Credentials of physicians coming from abroad are verified by direct correspondence with official agencies abroad so far as is possible. The statements regarding the medical education and licensure therefore of all physicians are accurate.

The data were also entered in the biographic file of physicians and others maintained by the Directory Department of the American Medical Association, thus serving a dual purpose. More than thirty licensing boards obtain from the Council verification of biographic data and other claims before granting a license or permission to take the licensing examination. This service is available to all boards.

The tables referring to medical licensing board results include figures regarding the number of candidates for medical licensure in 1938, the number licensed and the number added to the profession.

LICENSES ISSUED

The first table presented in these statistics includes figures covering the number of licenses issued during the year in the various states, territories and possessions. There were 9,493 licenses issued, 6,548 on the basis of examination and 2,945 by reciprocity and endorsement. In several states (table 12) the internship is a requisite for practice, but a physician is permitted to take the examination in most of these states and if successful his license is withheld until completion of his internship. Licenses are also withheld for lack of citizenship or minor technicalities. The figures, therefore, for those licensed after examination include many who were examined in 1937 and even a few in previous years. New York issued the largest number of licenses, 1,560, California 611, Illinois 595 and Pennsylvania 594. These states are the only ones which registered more than 500. Twenty states, the District of Columbia, Alaska, Hawaii, Puerto Rico and the Virgin Islands licensed less than 100. Candidates were licensed after examination in every state, the lowest being two in New Mexico. Alaska and the

(CONTINUED ON PAGE 1700)

TABLE 1.—*Licenses Issued—1938*

	Licensed on Basis of		
	Examination	Reciprocity and Endorsement	Total
Alabama	29	45	74
Arizona	15	23	38
Arkansas	75	31	106
California	403	208	611
Colorado	78	36	114
Connecticut	73	72	145
Delaware	14	5	19
District of Columbia	33	66	99
Florida	153	0	153
Georgia	72	37	109
Idaho	28	0	28
Illinois	485	110	595
Indiana	109	73	182
Iowa	95	66	161
Kansas	92	30	122
Kentucky	79	58	137
Louisiana	167	32	199
Maine	38	15	53
Maryland	227	47	274
Massachusetts	207	105	312
Michigan	206	166	372
Minnesota	219	31	250
Mississippi	34	26	60
Missouri	174	69	243
Montana	11	36	47
Nebraska	85	11	96
Nevada	5	11	16
New Hampshire	15	30	45
New Jersey	281	152	433
New Mexico	2	31	33
New York	1,078	482	1,560
North Carolina	85	71	156
North Dakota	15	10	25
Ohio	351	124	475
Oklahoma	42	38	80
Oregon	53	18	71
Pennsylvania	513	81	594
Rhode Island	26	21	47
South Carolina	39	18	57
South Dakota	8	8	16
Tennessee	180	21	201
Texas	200	175	375
Utah	12	7	19
Vermont	23	21	44
Virginia	127	62	189
Washington	72	51	123
West Virginia	65	41	106
Wisconsin	114	44	158
Wyoming	7	8	15
U. S. Terr. and Possessions*	34	22	56
Totals	6,548	2,945	9,493
Totals for 1937	6,621	3,186	9,807
Totals for 1936	6,271	2,762	9,033
Totals for 1935	5,717	2,193	7,910

* Alaska, Hawaii, Puerto Rico, Virgin Islands.

Marginal Number	SCHOOL	Alabama		Arizona		Arkansas		California		Colorado		Connecticut		Delaware		Dist. Columbia		Florida		Georgia		Idaho		Illinois		Indiana		Iowa		Kansas		Kentucky		Louisiana		Maine		Maryland		Massachusetts		Michigan		Minnesota		Marginal Number
		P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	P	F	
	ARKANSAS																																										
1	University of Arkansas School of Medicine					69	0	1	0									0	1					1	0			2	0					2	0									1
	CALIFORNIA																																										
2	College of Medical Evangelists							68	2	3	0							3	1			1	0	1	0			2	0											3	0			2
3	Stanford University School of Medicine							62	1			1	0									1	0																			4	0	3
4	University of California Medical School							58	0													1	0																	2	0			4
5	University of Southern California Sch. of Med.							40	0																							1	0			1	0							5
	COLORADO																																										
6	University of Colorado School of Medicine							2	0	40	0											1	0	1	0											1	0							6
	CONNECTICUT																																										
7	Yale University School of Medicine											1	0					2	0					1	0									1	0	1	0							7
	DISTRICT OF COLUMBIA																																										
8	George Washington University School of Med.							2	0							15	0	2	0			2	0									1	0	1	0	9	1	1	0					8
9	Georgetown University School of Medicine							2	0			4	0	1	0	7	0	2	0													3	0	1	0	4	0	4	0	1	0	9
10	Howard University College of Medicine															1	0	1	0					1	0							1	0			1	0							10
	GEORGIA																																										
11	Emory University School of Medicine	5	0															15	5	3	2	0										2	0					1	0	1	0			11
12	University of Georgia School of Medicine	1	0															5	2	3	2	0																						12
	ILLINOIS																																										
13	Loyola University School of Medicine							5	0			1	1					0	1					76	0	2	0	1	0					1	0			1	0			3	0	3	0	13
14	Northwestern University Medical School	1	0	1	0			11	1	4	0	1	0					8	0			2	0	59	0	2	0	1	0	1	0			1	0			1	0			2	0	9	0	8	0	14
15	University of Chicago, Rush Medical College	2	0					16	1			1	0					4	1			3	0	58	0	2	0	4	1	1	0	1	0			1	0	1	0	4	0	12	0	15
16	University of Chicago, The School of Medicine of the Division of Biological Sciences	1	0					2	0									1	0	1	0			20	0	1	0	1	0					1	0	1	0	3	0	2	0	16		
17	University of Illinois College of Medicine			2	0			10	0	1	0					1	0	6	1					133	0	3	0			1	0							1	0	2	0	17		
	INDIANA																																										
18	Indiana University School of Medicine																							1	0	82	0					1	0					1	0			3	0	18	
	IOWA																																										
19	State University of Iowa College of Medicine			1	0			6	0									2	0					1	0			78	10											3	1	19		
	KANSAS																																										
20	University of Kansas School of Medicine							2	0			1	0																	67	0							1	0			2	0	20	
	KENTUCKY																																										
21	University of Louisville School of Medicine							5	0									5	1							2	0					76	1							1	0	1	0	21	
	LOUISIANA																																										
22	Louisiana State University Medical Center			1	0													1	0													65	0											22
23	Tulane University of Louisiana Sch. of Med.	6	0					1	0									10	0	2	0											92	2									4	0	23
	MARYLAND																																										
24	Johns Hopkins University School of Medicine											1	0	3	0			1	0					2	0	2	0							1	0	6	8	0	4	0		4	0	24
25	University of Maryland School of Medicine and College of Physicians and Surgeons											1	0					2	1															2	0	1	0	7	7	0	3	0		25
	MASSACHUSETTS																																										
26	Boston University School of Medicine											1	0																			1	0	1	0			3	0			9	1			26
27	Harvard Medical School	2	0					5	0			5	0					3	0	1	0			2	0	1	0			1	0					3	0			18	0	3	0	6	0	27
28	Tufts College Medical School			1	0			3	0			12	0					3	0															1	0	1	0	3	5	3				28
	MICHIGAN																																										
29	University of Michigan Medical School							2	0									4	1			1	0	2	1															5	0	9	4	0	2	0	29
30	Wayne University College of Medicine							2	0																															7	5	0			30
	MINNESOTA																																										
31	University of Minnesota Medical School					1	0	2	0			1	0			1	0							1	0	1	0			4	0			2	0			1	0	2	0	2	0	104	1	31
	MISSOURI																																										
32	St. Louis University School of Medicine							11	1			1	1					2	1					3	0	1	0											1	0			1	0	32		
33	Washington University School of Medicine	2	0	1	0			3	0							1	0	2	0			2	0					1	0											1	0			33
	NEBRASKA																																										
34	Creighton University School of Medicine			1	0			16	2	1	0	1	1					1	0			1	0	1	0					6	1					1	0			1	0			34
35	University of Nebraska College of Medicine			1	0			3	1					1	0			0	1			1	0																			4	0	35	
	NEW YORK																																										
36	Albany Medical College											1	0					1	0																											36
37	Columbia University Coll. of Phys. and Surgs.					1	0	1	0					1	0			3	2					2	0					1	0			2	0			6	0	2	0			37
38	Cornell University Medical College	2	0									2	0																							1	0	3	0	1	0	2	0	38	
39	Long Island College of Medicine							1	0			1	0			1	0																			1	0							39
40	New York Medical College and Flower Hospital							1	0			2	0					1	0																			1	0	1	0			40
41	New York University College of Medicine											2	0					2	0					1	0							1	0	1	0			1	0					41
42	Syracuse University College of Medicine							1	0			1	0																															42
43	University of Buffalo School of Medicine			1	0																																							43
44	University of Rochester School of Medicine							2	0			1	0			1	0	1	0															1	0	2	0	2	0					44
	NORTH CAROLINA																																										
45	Duke University School of Medicine							2	0			1	0					2	0													1	0							1	0			45
	OHIO																																										
46	Ohio State University College of Medicine																	3	1																							1	0	46	
47	University of Cincinnati College of Medicine																	4	0													1	0	1	0					1	0	47	
48	Western Reserve University School of Medicine							1	0									2	0																			1	0			1	0	48	
	OKLAHOMA																																										
49	University of Oklahoma School of Medicine	1	0					1	1	2	0							1	1											3	0			1	0			1	0			2	0	49	
	OREGON																																										
50	University of Oregon Medical School							4	0											4	0	1	0					1	0	1	0			1	0			1	0			4	0	50	
	PENNSYLVANIA																																										
51	Hahnemann Medical Coll. and Hosp. of Phila.							1	0			0	1	2	0																			1	0	3	4	1						51
52	Jefferson Medical College of Philadelphia	1	0					2	0			4	0	2	0			3	1	1	0					1	0							2	0	1	0	2	0			3	0	52	
53	Temple University School of Medicine							1	0			1	0	2	0	1	0	5	1													1	0			1	0	1	0					53
54	University of Pennsylvania School of Medicine	1	0	2	0			3	0			2	0	1	0	1	0	4	2			1	0	1	0									1	0					2	0	8	0	54	
55	University of Pittsburgh School of Medicine																	3	0																							2	0	55	
56	Woman's Medical College of Pennsylvania							2	0																													1	1					56
	SOUTH CAROLINA																																										
57	Medical College of the State of South Carolina																	2	0					1	0							1	0											57
	TENNESSEE																																										
58	Meharry Medical College																	1	0					1	0			1	0			1	0			0	1							58
59	University of Tennessee College of Medicine	1	0															6	2													2	0					1	0					59
60	Vanderbilt University School of Medicine	1	0					1	0			1	0					5	0	2	0	1	0									1	0					4	0					60
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22																				

P = Passed; F = Failed.

Marginal Number	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Hawaii, Puerto Rico	Totals	Examined—Passed	Examined—Failed	Percentage—Failed	No. Boards Examined by	Marginal Number
	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F						
1	1 1 0								1 0									1 0	2 0	0 1			1 0	2 0	2 0	1 0			88	86	2	2.3	15	1
2			1 0	1 0	1 0					1 0	0 1	1 0		1 0	1 0									2 0		1 0			95	91	4	4.2	17	2
3									1 0						1 0													1 0	72	71	1	1.4	7	3
4																												1 0	62	62	0	0.0	4	4
5					1 0		0 1																						44	43	1	2.3	5	5
6									1 0		1 0			1 0						1 0				1 0		1 0 1 0			52	52	0	0.0	12	6
7							1 0			1 0																		1 0	9	9	0	0.0	8	7
8							3 0		14 1	1 0		1 0		1 0	8 0					2 0				1 0				2 0	68	66	2	2.9	17	8
9			1 0				20 0		17 7	3 0					15 0	3 0						2 0	2 0		1 0			1 0	101	94	7	6.9	20	9
10		3 0					2 0		5 1	4 0					3 0				5 0				6 0						34	33	1	2.9	12	10
11	1 1 0								3 0	8 0							1 0		2 0						1 0				77	72	5	6.5	12	11
12									0 1	1 0					2 0										1 0	1 0			46	43	3	6.5	8	12
13			1 0				4 0		4 5		1 0	9 1			6 0									2 0	2 0	2 0	1 0	3 0	136	128	8	5.9	21	13
14	1 0		1 0	2 0	1 0		2 0		4 0	1 0		8 0		2 0					1 0		2 0			9 0	3 0	9 0	1 0	1 1	161	159	2	1.2	31	14
15	3 0	3 0			1 0	4 0	1 0		12 1	1 0	2 0	3 0		1 0	4 0			2 0		1 0	4 0		1 0	5 0	5 0	4 0	1 0	1 0	173	169	4	2.3	34	15
16	1 1								4 0			1 0								1 0						2 0			44	43	1	2.3	16	16
17	2 0								2 0			1 0													1 0	4 0	2 0			173	172	1	0.6	16	17
18																								2 0				1 0	91	91	0	0.0	7	18
19	1 0														3 0	1 0													107	96	11	10.4	9	19
20	1 0								2 0					2 0	1 0													1 0	80	80	0	0.0	10	20
21	1 0			1 0					4 1	3 0		2 0			1 0					1 0				3 0	2 0		1 0	112	109	3	2.7	16	21
22						1 0														1 0									69	69	0	0.0	5	22
23	7 0								1 0										5 0	2 0			1 0			1 0		1 0	135	133	2	1.5	13	23
24	2 0								1 0	3 0	1 0	2 0			2 0	0 1								1 0	1 0				100	99	1	1.0	18	24
25							5 0		0 1	1 0					7 0	1 0												2 0	107	105	2	1.9	13	25
26							1 0		5 1							2 0	0 1												26	23	3	11.5	9	26
27	1 0					1 0	6 0		12 0			1 0			5 0	3 0				4 0	1 0			6 0		5 0		1 0	96	96	0	0.0	24	27
28						5 0	1 0		6 2							3 0									1 0				86	81	5	5.8	12	28
29	1 0						4 0		11 0											1 0				1 0					130	128	2	1.5	12	29
30																													77	77	0	0.0	2	30
31			1 0				2 0				7 0	2 0			1 0			3 0						2 0		2 0			143	142	1	0.7	20	31
32	68 0								6 2						5 0				15 0	2 0			1 0	2 0					124	119	5	4.0	14	32
33	81 0								2 0	1 0					2 0					2 0	1 0			1 0				1 0	104	104	0	0.0	16	33
34	1 0		15 0				7 0		5 2			1 0	1 0		1 0			1 0		1 1				4 0			1 0		75	68	7	9.3	21	34
35	1 0		66 0						3 1				5 0					1 0						5 0		1 0			95	92	3	3.2	13	35
36		1 0							19 0																				22	22	0	0.0	4	36
37							2 0		68 4						4 0	1 0				1 0				2 0	1 0				104	98	6	5.8	16	37
38							1 0		46 2	1 0					1 0	1 0	1 0							1 0		1 0			66	64	2	3.0	14	38
39			1 0				3 0		67 6							1 0													82	76	6	7.3	8	39
40							7 0		14 1																				28	27	1	3.6	7	40
41				1 0	5 0				104 4	3 0					2 0											1 0			128	124	4	3.1	12	41
42							2 0		31 3					1 0															39	36	3	7.7	5	42
43							1 0		46 4		1 0																		53	49	4	7.5	4	43
44							3 0		22 2	1 0		8 0														1 0			47	45	2	4.3	12	44
45							1 0			4 0					2 0										1 0				15	15	0	0.0	9	45
46											91 0			1 0										2 0					99	98	1	1.0	5	46
47											66 0			1 0										3 0	1 0				79	79	0	0.0	9	47
48											61 0			3 0										1 0	4 0				74	74	0	0.0	8	48
49									2 0				45 0	1 0						1 0				1 0					64	62	2	3.1	13	49
50									2 0					32 0	1 0									14 0		2 0			68	68	0	0.0	13	50
51							25 0		5 5			7 0			72 1	1 0									4 0				160	152	8	5.0	11	51
52						1 0	17 0		15 1	9 0		2 0		1 0	87 0	3 0							1 0		1 0	1 0			162	160	2	1.2	22	52
53							11 0		8 2	8 0		3 0			69 2					1 0				1 0		2 0	1 0		122	117	5	4.1	17	53
54	1 0						10 0		11 2	9 0		3 0			86 1		1 0		1 0	1 0					1 0		2 0		158	153	5	3.2	23	54
55															60 0														65	65	0	0.0	3	55
56							2 0		6 2	2 0		1 0			13 0														31	28	3	9.7	8	56
57					1 0				1 0	4 0					2 0			36 0											48	48	0	0.0	8	57
58	2 2																		33 2										44	39	5	11.4	7	58
59	16 0										0 1								74 0						1 0			0 1	105	101	4	3.8	9	59
60	4 0									3 0					1 0 1 0				38 0						1 0				64	64	0	0.0	14	60
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50						

Marginal Number	SCHOOL	1 Alabama P	F	2 Arizona P	F	3 Arkansas P	F	4 California P	F	5 Colorado P	F	6 Connecticut P	F	7 Delaware P	F	8 Dist. Columbia P	F	9 Florida P	F	10 Georgia P	F	11 Idaho P	F	12 Illinois P	F	13 Indiana P	F	14 Iowa P	F	15 Kansas P	F	16 Kentucky P	F	17 Louisiana P	F	18 Maine P	F	19 Maryland P	F	20 Massachusetts P	F	21 Michigan P	F	22 Minnesota P	F	Marginal Number
	TEXAS																																													
61	Baylor University College of Medicine							2	0									0	1															1	0					2	0			3	0	61
62	University of Texas School of Medicine							1	0									1	0	1	0	1	0																					3	0	62
	VERMONT																																													
63	University of Vermont College of Medicine			1	0							6	0					1	0																	1	0			1	0					63
	VIRGINIA																																													
64	Medical College of Virginia											1	0			2	0	2	1																									1	0	64
65	University of Virginia Department of Medicine													1	0			5	1																	1	0			1	0					65
	WISCONSIN																																													
66	Marquette University School of Medicine							4	1			1	0					1	0			1	0	3	0																	7	0	3	0	66
67	University of Wisconsin Medical School							2	0															2	0					2	0			1	0			1	0			1	0			67
	CANADA																																													
68	Dalhousie University Faculty of Medicine	1	0																																							1	0			68
69	Laval University Faculty of Medicine																																													69
70	McGill University Faculty of Medicine			1	0			9	1			2	0					1	0			1	0	1	0	2	0									3	0			3	0	1	0	4	0	70
71	Queen's University Faculty of Medicine											1	0															1	0					1	0	1	0							2	0	71
72	University of Alberta Faculty of Medicine																					1	0					1	0															1	0	72
73	University of Manitoba Faculty of Medicine																	1	0			1	0															1	0	1	0			3	0	73
74	University of Montreal Faculty of Medicine																																			1	0					0	1			1	0	74
75	University of Toronto Faculty of Medicine							1	0			1	0					2	4					5	0																	1	0			4	0	75
76	University of Western Ontario Medical School	1	0																																								1	0			76
77	Foreign Medical Faculties							19	3	9	0	9	16									1	0	48	7	6	1	4	0	1	0					2	7	16	34	17	18	0	1	4	0	77
78	Extinct Medical Schools																	3	7																	1	0	0	1							78
79	Unapproved Schools and Undergraduates			1	0	1	0			18	3	0	4			1	0	2	0					60	4																	68	196			79
80	Totals	29	15	72	417	81	97	14	33	194	72	28	502	109	106	94	82	186	46	265	427	226	221	80																						
81	Totals—Examined—Passed	29	15	72	402	78	73	14	33	153	72	28	490	108	95	93	81	184	39	227	207	225	219	81																						
82	Totals—Examined—Failed	0	0	0	15	3	24	0	0	41	0	0	12	1	11	1	1	2	7	38	220	1	2	82																						
83	Percentage—Failed	0.0	0.0	0.0	3.6	3.7	24.7	0.0	0.0	21.1	0.0	0.0	2.4	0.9	10.4	1.1	1.2	1.1	15.2	14.3	51.5	0.4	0.9	83																						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22																						

P = Passed; F = Failed.

(CONTINUED FROM PAGE 1697)

Virgin Islands licensed none by examination. Florida and Idaho grant licenses only on the basis of examination. Massachusetts and Rhode Island have no reciprocity privileges but endorse diplomates of the National Board of Medical Examiners. The total number licensed, 9,493, was 314 less than in 1937 but 460 more than in 1936 and 1,583 more than in 1935. On the basis of examination the figures decreased 73 and those licensed by reciprocity or endorsement decreased 241 compared with the figures for 1937. The 9,493 licenses issued do not, however, represent individuals, since several have been licensed in more than one state during the year. Nor does it represent additions to the medical profession at large, since the majority of the 2,945 licensed by reciprocity and endorsement, with the exception of those licensed on the basis of foreign credentials, and many of the National Board diplomates, have migrated from other states. Table 8 shows how many of those licensed were never before registered and therefore represent the number added to the medical profession.

TOTAL EXAMINED

In table 2 are included figures referring to those examined for medical licensure by individual states throughout the year, giving the number who passed and who failed in each state. There were 7,454 examined, of whom 6,582 passed and 872 failed, representing sixty-seven four year approved medical schools in the United States and eight of the medical schools of Canada, seventy-nine faculties of medicine and seven licensing corporations of other countries, eleven medical schools now extinct, eight unapproved institutions and several osteopathic colleges. Two undergraduates were examined. Osteopaths who were granted the privilege to practice medicine, surgery or both by the medical boards are included in these statistics, eliminating, for instance, those osteopaths in California who were granted privileges as physicians and surgeons by the osteopathic board. There were 5,606 graduates of approved medical schools in the United States examined, of whom 2.9 per cent failed; 163 graduates of approved Canadian medical schools, 9.2 per cent of whom failed; 1,166 graduates of schools outside the United States and Canada, principally in Europe, with 38.6 per cent failures; thirteen who graduated from schools now extinct with 69.2 per cent of failures, and 504 from unapproved and osteopathic schools and two undergraduates, of whom 47.0 per cent failed. These 506 represented 163 graduates of osteopathic schools, of whom 101 passed and sixty-two, 38.0 per cent, failed; 341 graduates of unapproved schools, of whom 166 passed and 175, 51.3 per cent, failed, and two undergraduates, one of whom failed. The latter were examined in Mississippi and New Jersey. Graduates of osteopathic schools were examined by the medical boards of nine states—Colorado, Connecticut, District of Columbia, Massachusetts, New Hampshire, New Jersey, Oregon, Texas and Virginia—while graduates of unapproved schools were examined in twelve states and Hawaii—Arizona, Arkansas, Florida, Illinois, Massachusetts, New Jersey, New Mexico, New York, Ohio, Pennsylvania, Texas and Vermont. Of the 163 osteopaths, fifty-eight were examined in New Jersey, forty-one in Massachusetts, thirty-four in Texas and twenty-one in Colorado. Other states examined fewer than five. Of those graduates of other than recognized schools, Massachusetts examined 223, Illinois sixty-four, Ohio thirty-two and New Jersey seven. All other states examined fewer than five. Osteopaths in Colorado, Massachusettts, New Hampshire, New

Marginal Number	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Hawaii, Puerto Rico	Totals	Examined—Passed	Examined—Failed	Percentage—Failed	No. Boards Examined by	Marginal Number
	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F						
61	1 0														1 0					76 1				1 0				1 0	90	88	2	2.2	10	61
62	1 0														1 0					77 3									89	86	3	3.4	8	62
63									2 0								1 0					21 0							34	34	0	0.0	8	63
64							2 0			10 0				1 0	4 0							53 0		10 0	1 0		3 0	91	90	1	1.1	12	64
65							1 0															51 0		4 1				67	65	2	3.0	8	65
66									5 1			5 0			1 0										36 0			69	67	2	2.9	11	66
67	2 0																					2 0		1 0	33 0			47	47	0	0.0	10	67
68							2 0		9 0						1 0													14	14	0	0.0	5	68
69																												0	0	0	0.0	0	69
70	1 0					3 0	2 0		15 2	2 0	1 0	2 0		1 0	4 0	1 0				1 0			1 0	2 0					67	64	3	4.5	24	70
71							1 0		10 2																1 0			20	18	2	10.0	8	71
72									1 0																			4	4	0	0.0	4	72
73											1 0									1 0	1 0		1 0	1 0					12	12	0	0.0	10	73
74							1 0																					4	3	1	25.0	4	74
75									5 2			1 0			3 0	1 0												1 0	31	25	6	19.4	11	75
76									5 3			1 0																	11	8	3	27.3	4	76
77	2 0					2 0	66	40	433	297		27	10		1 0	20	4	3 0		2 1	3 5		4 0	1 0	6 0			10 6	1,166	716	450	38.6	28	77
78																0 1												13	4	9	69.2	4	78
79	0 1					2 0	53	12	1 0	0 1		32 0		1 0	4 0					23	15	0	1 1	0				0 1	506	268	238	47.0	20	79
80	32	177	11	85	5	16	334	2	1,450	85	17	353	46	53	521	27	40	8	182	226	12	27	127	72	66	114	7	43	7,454	.....	.....	.....	..	80
81	31	174	11	85	5	16	281	2	1,078	85	15	342	46	53	512	26	39	8	179	200	12	26	127	72	65	114	7	34	.....	6,582	.....	.....	..	81
82	1	3	0	0	0	0	53	0	372	0	2	11	0	0	9	1	1	0	3	26	0	1	0	0	1	0	0	9	.....	.....	872	.....	..	82
83	3.1	1.7	0.0	0.0	0.0	0.0	15.9	0.0	25.7	0.0	11.8	3.1	0.0	0.0	1.7	3.7	2.5	0.0	1.6	11.5	0.0	3.7	0.0	0.0	1.5	0.0	0.0	21.0	.....	.....	...	11.7	..	83

Jersey and Texas were examined in medicine and surgery, those in the District of Columbia, Oregon and Virginia only in surgery, while Connecticut examined two in surgery, one in medicine and one in medicine and surgery.

The United States territories and possessions refer to Hawaii and Puerto Rico.

The 7,454 examined do not represent individuals, since a candidate might take the examination in more than one state and would be counted in each state. This applies to those who pass or fail, or those who fail and later pass in one or more states, or pass in one state and later in the same year fail elsewhere. However, if a physician fails more than once in a given state within the year he is counted in that state only once as a failure.

Three of the five homeopathic boards in existence, Connecticut, Delaware and Maryland, examined forty-one candidates, two of whom failed. The homeopathic board of Louisiana did not examine any one during the year. The one eclectic board in existence, in Arkansas, did not examine a candidate.

The largest number of graduates of any one school examined was 173. Two schools of Illinois each had 173 graduates examined. Graduates of Rush Medical College were examined in thirty-four states, while the 173 graduates of the University of Illinois College of Medicine were examined in sixteen states. Of the graduates of Rush 2.3 per cent failed, while the University of Illinois had 0.6 per cent failures. There were 162 graduates of Jefferson Medical College of Philadelphia examined in twenty-two states. Two other schools, namely the Hahnemann Medical College and Hospital of Philadelphia and Northwestern University Medical School, had 160 and 161, respectively, examined in eleven and in thirty-one states. Boston University School of Medicine and Meharry Medical College had the highest percentage of failures in the United States, 11.5 and 11.4 respectively. Graduates of Rush Medical College were examined in the most states, thirty-four. Graduates of Northwestern University Medical School were examined by thirty-one states, Harvard Medical School by twenty-four, the University of Pennsylvania School of Medicine by twenty-three, Jefferson Medical College by twenty-two, Loyola University School of Medicine and Creighton University School of Medicine by twenty-one states each, and Georgetown University School of Medicine and the University of Minnesota Medical School by twenty states each. All other schools had their graduates examined in fewer than twenty states. Graduates of Wayne University College of Medicine (seventy-seven) were examined by two states, one of which was Michigan, the state in which the school is located, which examined seventy-five. Graduates of the University of Pittsburgh School of Medicine were examined in three states, namely Florida, Minnesota and Pennsylvania.

Canadian graduates took the test for medical licensure in thirty states and Hawaii as follows:

Alabama
Arizona
California
Connecticut
Florida
Hawaii
Idaho
Illinois
Indiana
Iowa
Louisiana
Maine
Maryland
Massachusetts
Michigan
Minnesota
Missouri
New Hampshire
New Jersey
New York
North Carolina
North Dakota
Ohio
Oregon
Pennsylvania
Rhode Island
Tennessee
Texas
Virginia
Washington
West Virginia

The greatest number, sixty-seven, represented McGill University Faculty of Medicine, who were examined in twenty-four states; thirty-one graduates of the University of Toronto Faculty of Medicine were examined in eleven states, while twelve graduates from the University of Manitoba Faculty of Medicine were exam-

ined in ten states. The highest percentage of failures was 27.3, representing the University of Western Ontario Medical School; of eleven examined, three failed.

Nineteen medical schools had no failures before state licensing boards, namely the Universities of California, Colorado, Yale, Indiana, Kansas, Louisiana State, Harvard, Wayne, Washington, Albany, Duke, Cincinnati, Western Reserve, Oregon, Pittsburgh, South Carolina, Vanderbilt, Vermont and Wisconsin.

Thirteen graduates of medical schools now extinct were examined in four states with 69.2 per cent failures, a total of 1,166 graduates of medical schools outside the United States and Canada were examined in twenty-eight states, while 506 unapproved graduates and undergraduates were examined in twenty states.

In 1937, 7,325 were examined, of whom 6,594 passed and 731, 10.0 per cent, failed, as compared with 7,454 examined in 1938, of whom 6,582 passed and 872, 11.7 per cent, failed. There were 129 more examined than in 1937; twelve less passed but the failures increased 141. Elsewhere are given figures representing actual licentiates and additions to the medical profession.

GRADUATES OF 1936, 1937 AND 1938 EXAMINED FOR MEDICAL LICENSURE IN 1938

In table 3 are presented figures recording graduates of 1936, 1937 and 1938 examined for medical licensure in 1938. Altogether 6,118 were examined, 5,669 of whom passed and 449, 7.3 per cent, failed. Of these, 5,153 represented medical graduates of sixty-seven approved medical schools in the United States, of whom 5,043 passed and 110, 2.1 per cent, failed. Ninety-nine graduates of eight approved schools in Canada were examined, ninety-four of whom passed and five failed. There were 507 recent graduates of medical faculties outside the United States and Canada examined, of whom 322 passed and 185, 36.5 per cent, failed. There were also examined 359 graduates of medical schools not approved by the American Medical Association, of whom 210 passed and 149, 41.5 per cent, failed. Of

TABLE 3.—*Graduates of 1936, 1937 and 1938 Examined for Medical Licensure in 1938*

School	Totals	Examined—Passed	Examined—Failed	Percentage—Failed	Number of Boards Examined by
ARKANSAS					
University of Arkansas School of Medicine	87	85	2	2.3	15
CALIFORNIA					
College of Medical Evangelists	90	87	3	3.3	16
Stanford University School of Medicine	70	69	1	1.4	5
University of California Medical School	61	61	0	0.0	3
University of Southern California School of Med.	43	43	0	0.0	4
COLORADO					
University of Colorado School of Medicine	48	48	0	0.0	8
CONNECTICUT					
Yale University School of Medicine	5	5	0	0.0	5
DISTRICT OF COLUMBIA					
George Washington University School of Medicine	64	62	2	3.1	16
Georgetown University School of Medicine	95	89	6	6.3	18
Howard University College of Medicine	29	29	0	0.0	11
GEORGIA					
Emory University School of Medicine	68	65	3	4.4	10
University of Georgia School of Medicine	41	39	2	4.9	6
ILLINOIS					
Loyola University School of Medicine	131	123	8	6.1	20
Northwestern University Medical School	144	143	1	0.7	30
University of Chicago, Rush Medical College	164	161	3	1.8	32
University of Chicago, The School of Medicine of the Division of Biological Sciences	40	39	1	2.5	14
University of Illinois College of Medicine	164	164	0	0.0	14
INDIANA					
Indiana University School of Medicine	87	87	0	0.0	5
IOWA					
State University of Iowa College of Medicine	103	92	11	10.7	8
KANSAS					
University of Kansas School of Medicine	72	72	0	0.0	5
KENTUCKY					
University of Louisville School of Medicine	101	99	2	2.0	15
LOUISIANA					
Louisiana State University Medical Center	69	69	0	0.0	5
Tulane University of Louisiana School of Medicine	127	125	2	1.6	13
MARYLAND					
Johns Hopkins University School of Medicine	79	78	1	1.3	11
University of Maryland School of Medicine and College of Physicians and Surgeons	105	104	1	1.0	13
MASSACHUSETTS					
Boston University School of Medicine	19	18	1	5.3	6
Harvard Medical School	51	51	0	0.0	21
Tufts College Medical School	64	63	1	1.6	9
MICHIGAN					
University of Michigan Medical School	120	119	1	0.8	10
Wayne University College of Medicine	77	77	0	0.0	2
MINNESOTA					
University of Minnesota Medical School	128	127	1	0.8	16
MISSOURI					
St. Louis University School of Medicine	118	116	2	1.7	13
Washington University School of Medicine	99	99	0	0.0	15
NEBRASKA					
Creighton University School of Medicine	72	65	7	9.7	19
University of Nebraska College of Medicine	85	85	0	0.0	11
NEW YORK					
Albany Medical College	20	20	0	0.0	2
Columbia University College of Physicians and Surgeons	83	81	2	2.4	11
Cornell University Medical College	57	57	0	0.0	12
NEW YORK (Continued)					
Long Island College of Medicine	79	75	4	5.1	7
New York Medical College and Flower Hospital	24	24	0	0.0	5
New York University College of Medicine	119	116	3	2.5	10
Syracuse University College of Medicine	38	35	3	7.9	4
University of Buffalo School of Medicine	52	48	4	7.7	3
University of Rochester School of Medicine	37	36	1	2.7	6
NORTH CAROLINA					
Duke University School of Medicine	13	13	0	0.0	8
OHIO					
Ohio State University College of Medicine	96	96	0	0.0	4
University of Cincinnati College of Medicine	77	77	0	0.0	9
Western Reserve University School of Medicine	67	67	0	0.0	5
OKLAHOMA					
University of Oklahoma School of Medicine	63	61	2	3.2	13
OREGON					
University of Oregon Medical School	64	64	0	0.0	13
PENNSYLVANIA					
Hahnemann Medical College and Hospital of Philadelphia	156	149	7	4.5	10
Jefferson Medical College of Philadelphia	146	146	0	0.0	19
Temple University School of Medicine	114	110	4	3.5	14
University of Pennsylvania School of Medicine	141	137	4	2.8	21
University of Pittsburgh School of Medicine	61	61	0	0.0	2
Woman's Medical College of Pennsylvania	28	27	1	3.6	8
SOUTH CAROLINA					
Medical College of the State of South Carolina	45	45	0	0.0	6
TENNESSEE					
Meharry Medical College	40	36	4	10.0	5
University of Tennessee College of Medicine	97	96	1	1.0	6
Vanderbilt University School of Medicine	56	56	0	0.0	10
TEXAS					
Baylor University College of Medicine	86	84	2	2.3	9
University of Texas School of Medicine	87	84	3	3.4	7
VERMONT					
University of Vermont College of Medicine	31	31	0	0.0	6
VIRGINIA					
Medical College of Virginia	86	86	0	0.0	11
University of Virginia Department of Medicine	60	59	1	1.7	6
WISCONSIN					
Marquette University School of Medicine	67	65	2	3.0	10
University of Wisconsin Medical School	43	43	0	0.0	9
CANADA					
Dalhousie University Faculty of Medicine	13	13	0	0.0	5
Laval University Faculty of Medicine	0	0	0	0.0	0
McGill University Faculty of Medicine	45	43	2	4.4	19
Queen's University Faculty of Medicine	13	12	1	7.7	5
University of Alberta Faculty of Medicine	2	2	0	0.0	2
University of Manitoba Faculty of Medicine	5	5	0	0.0	4
University of Montreal Faculty of Medicine	2	2	0	0.0	2
University of Toronto Faculty of Medicine	13	12	1	7.7	7
University of Western Ontario Medical School	6	5	1	16.7	3
Foreign Medical Faculties	507	322	185	36.5	18
Unapproved Schools	359	210	149	41.5	17
Totals	6,118				
Totals—Examined—Passed		5,669			
Totals—Examined—Failed			449		
Percentage—Failed				7.3	

United States schools 2.1 per cent failed, of the Canadian graduates 5.1 per cent failed, of those educated outside the United States and Canada 36.5 per cent failed, and of graduates of unapproved schools 41.5 per cent failed. Of the United States graduates, the school having the highest percentage of failures, 10.7, was the State University of Iowa College of Medicine, whose graduates were examined in eight states. Ten per cent of the graduates of Meharry Medical College failed, while 16.7 per cent of the graduates of the University of Western Ontario Medical School failed. Twenty-eight schools in the United States had no failures among its recent graduates examined for medical licensure in 1938. Graduates of Rush Medical College were examined in thirty-two states, Northwestern graduates in thirty, Harvard and the University of Pennsylvania in twenty-one, and Loyola in twenty states. Two states licensed recent graduates of Wayne, Albany and Pittsburgh. The greatest number examined by any one state was New York, 1,014, Pennsylvania was second with 489, Illinois examined 451, California 379 and Ohio 322.

More than 100 were examined from sixteen schools, the highest being the 164 graduates each of Rush Medical College and the University of Illinois College of Medicine. Forty-five graduates of McGill University Faculty of Medicine were examined in nineteen states, while none from Laval University Faculty of Medicine were examined. Only five graduates of Yale during the years named were examined in five states and only thirteen graduates of Duke University School of Medicine, who were examined in eight states. Of these two schools, as shown in table 2, Yale had only nine graduates of all years examined, none of whom failed, and Duke fifteen, with no failures. The State University of Iowa had 107 graduates of all years examined with 10.4 per cent failures, while Meharry had forty-four examined with 11.4 per cent failures.

The figures shown in table 3 are subdivided by years in the following tabulation:

Graduates of	1936		1937		1938	
	Passed	Failed	Passed	Failed	Passed	Failed
Medical schools in the United States	379	15	1,358	37	3,306	58
Medical schools in Canada	23	2	48	2	23	1
Foreign faculties of medicine	120	82	153	81	49	22
Unapproved medical schools and osteopaths	28	46	42	67	140	36
Totals	550	145	1,601	187	3,518	117

Of the 3,364 graduates of approved medical schools in the United States examined in 1938, fifty-eight failed, while thirty-seven of the 1,395 examined in 1937 failed and fifteen of the 394 examined in 1936 failed. The greatest percentage of failures was among the unapproved graduates.

FAILURES

In table 4 are presented for each state the number of candidates examined or granted licenses by endorsement or reciprocity and the number licensed after one failure and after two or more failures, these two groups being classified by indication whether the failure or failures have been in the state in which they are receiving a license or elsewhere.

Of the total number examined or endorsed, 9,527, 357 failed, 182 after one examination in the state in which they were licensed in 1938 and sixty-three elsewhere, while eighty-five failed more than once in the state awarding the 1938 license and twenty-seven elsewhere, leaving 9,170 licensed without ever having failed a medical licensing examination.

In the computation of this table it was noted that an osteopath was licensed in Massachusetts who was unsuccessful in passing the examination in Massachusetts on six occasions. Of the graduates of unapproved schools licensed in Massachusetts five failed four previous examinations, four had five failures before successfully passing, two failed nine times, one failed twelve times and another failed at fourteen examinations. New Hampshire granted a license by endorsement to a candidate who failed examinations in other states seven times. New Jersey issued licenses to two individuals with five failures. In New York, four had four previous failures, one failed five times and another had six unsuccessful examinations, while still another had seven unsuccessful examinations. Texas endorsed a candidate with seven failures.

TABLE 4.—*Failures Before Medical Licensing Boards by Licentiates of 1938*

	Number Examined or Registered by Reciprocity or Endorsement	Number Licensed After One Failure		Number Licensed After Two or More Failures	
		Failed in State Where Licensed	Elsewhere	Failed in State Where Licensed	Elsewhere
Alabama	74	..	2	..	..
Arizona	38	..	..	..	..
Arkansas	103	..	..	..	..
California	610	4	6	2	2
Colorado	114	..	..	..	..
Connecticut	145	1	2	1	..
Delaware	19	..	..	..	..
District of Columbia	99	..	2	..	1
Florida	153	5	1	1	1
Georgia	109	..	..	..	..
Idaho	28	..	..	..	..
Illinois	600	1	2	2	2
Indiana	181	1	1	..	..
Iowa	161	..	2	..	..
Kansas	123	..	1	..	..
Kentucky	139	..	1	..	..
Louisiana	216	2	..	..	..
Maine	54	..	..	..	..
Maryland	274	2	2	2	..
Massachusetts	312	12	3	24	1
Michigan	391	1	1	..	..
Minnesota	250	..	..	..	..
Mississippi	57	..	..	..	..
Missouri	243	3	..	..	..
Montana	47	..	2	..	..
Nebraska	96	..	..	..	..
Nevada	16	..	..	..	..
New Hampshire	46	..	2	..	1
New Jersey	433	17	12	5	5
New Mexico	33	..	..	..	..
New York	1,560	123	7	48	12
North Carolina	156	..	..	..	..
North Dakota	25	..	..	..	..
Ohio	466	1	2	..	..
Oklahoma	84	..	..	..	..
Oregon	71	..	..	..	..
Pennsylvania	593	1	3	..	..
Rhode Island	47	1	..	..	..
South Carolina	57	..	..	..	..
South Dakota	16	..	..	..	..
Tennessee	200	..	2	..	..
Texas	375	5	2	..	2
Utah	19	..	..	..	..
Vermont	47	..	1	..	..
Virginia	189	..	..	..	..
Washington	123	..	1	..	..
West Virginia	106	..	2	..	..
Wisconsin	158	..	..	..	..
Wyoming	15	..	..	..	..
Hawaii, Puerto Rico	56	2	1	..	..
Totals	9,527	182	63	85	27

TABLE 5.—*Credentials Presented by Physicians for Licensure by Reciprocity and Endorsement—1938*

Marginal Number	Total Licensed	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	District of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U. S. Gov't Services	National Board of Medical Examiners	Hawaii, Puerto Rico	Canadian & Foreign	Miscellaneous
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Alabama	45	..	..	1	..	1	..	..	..	..	2	..	..	..	1	1	1	8	..	1	..	3	1	..	4	..	..	..	..	..	..	2	..	..	3	1	..	1	..	1	..	..	..	..	..	..	..	1	..	..	3	..	..	..
Arizona	23	..	..	..	1	..	..	..	..	..	..	..	6	..	..	..	..	1	..	..	..	..	..	..	2	..	..	..	..	..	1	..	..	2	..	1	..	..	1	..	7	..	..	..	..	..	..	..	..	..	..	..	..	..
Arkansas	31	..	..	..	..	3	..	..	..	..	..	..	3	..	..	..	..	1	..	..	..	..	..	..	2	..	..	..	..	..	1	..	..	2	..	1	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..
California	208	..	1	1	..	6	..	..	..	..	3	2	11	3	6	8	1	1	1	4	3	9	16	..	10	1	16	..	..	1	..	27	..	1	9	3	7	8	..	2	3	4	2	2	1	1	3	..	1	..	7	22	1	..	..
Colorado	36	..	..	..	2	..	..	..	..	1	..	..	6	..	2	2	1	..	..	..	..	1	1	..	3	..	6	..	..	1	..	2	..	..	2	1	..	..	..	..	..	..	..	1	..	1	1	..	..	1	..	1	..	..	..
Connecticut	72	..	..	..	2	..	..	1	1	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	..	..	14	..	..	1	..	1	1	..	..	..	..	..	..	..	..	3	..	1	..	..	1	..	..	..
Delaware	5	..	..	..	..	1	..	..	..	..	4	..	..	1	..	1	..	1	1	16	1	1	1	..	1	..	..	..	..	..	..	5	..	..	1	..	..	6	..	..	1	..	..	1	..	..	3	..	..	1	17	..	1	..
Dist. Columbia	66	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	1	..	..	1	2	1	..	..	..	..	1	..	2	..	..	2	1	..	1	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Florida	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Georgia	37	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	..	1	..	..	6	..	..	1	..	1	17	..	1	..
Idaho	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	2	1	..	..	..	..	1	..	..	2	..	2	1	..	1	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Illinois	110	2	..	4	4	3	..	..	1	..	1	..	14	..	2	2	..	..	..	4	..	4	3	..	13	..	4	..	..	1	..	..	..	8	3	1	6	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Indiana	73	..	..	2	..	1	..	..	..	1	..	..	14	..	2	3	8	2	..	4	..	7	..	..	1	..	..	..	..	3	..	6	1	..	10	1	..	..	..	..	3	..	1	1	..	..	..	2	20	..	..	..
Iowa	66	..	..	..	1	..	..	..	..	..	1	..	15	1	..	5	1	..	..	..	..	3	6	..	3	..	12	..	..	1	..	5	..	..	1	..	..	..	..	..	..	..	1	1	..	..	1	..	..	2	..	..	..
Kansas	30	..	..	..	1	..	..	..	..	..	1	..	4	1	..	..	..	..	..	..	..	..	..	..	10	..	3	..	..	1	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Kentucky	58	..	..	..	..	..	..	..	..	..	2	..	3	1	..	..	..	..	..	..	..	..	..	..	10	..	3	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Louisiana	32	..	..	3	..	..	..	..	..	..	1	..	2	1	..	1	..	3	..	3	..	6	1	..	2	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..
Maine	15	..	..	..	..	..	..	..	1	..	1	..	2	1	..	1	..	..	..	1	..	1	2	2	1	..	2	..	..	..	..	2	..	..	11	1	..	..	..	1	11	..	..	..	2	..	1	1	..	1	6	..	..	..
Maryland	47	..	..	..	2	..	..	1	3	..	..	..	5	..	..	..	..	..	..	1	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	8	2	..	..	2	..	..	1	..	..	..	..	..	..
Massachusetts	105	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	1	..	1	..	..	..	..	..	..	..	3	3	..	2	..	..	5	..	..	1	2	..	..	3	..	1	..	..	12	..	..	..
Michigan	166	1	..	2	4	3	1	..	..	..	2	..	24	1	7	2	4	3	..	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	105	..	..	..
Minnesota	31	..	..	..	..	..	..	..	..	..	..	..	5	..	1	..	..	1	..	1	..	..	..	..	..	1	3	..	..	..	..	1	..	..	32	..	..	4	..	..	..	11	11	..	..	..	2	..	1	4	..	16	..	..	..
Mississippi	26	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	..	..	..
Missouri	69	..	..	3	..	2	..	..	..	..	1	..	5	1	2	19	4	1	1	2	..	1	..	..	..	..	1	..	..	..	..	..	..	3	..	..	2	..	..	..	10	3	..	..	..	2	..	..	3	..	..	1	..	..	..
Montana	36	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	1	..	..	2	..	2	..	1	..	..	1	1	..	1	2	..	..	..	..	8	1	..	..	1	..	..	1	..	..	7	..	1	..
Nebraska	11	..	..	..	..	..	..	..	1	..	..	..	2	..	4	1	2	..	1	..	..	1	5	..	2	..	4	..	..	..	..	..	..	1	1	..	1	..	..	1	..	..	..	..	1	..	..	..	..	..	7	..	1	..
Nevada	11	..	..	..	1	..	..	..	..	..	..	..	..	..	3	1	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	1	2	..	..	7	1	..	..
New Hampshire	29	..	..	..	..	2	..	..	..	..	..	..	..	..	1	1	..	1	..	..	..	..	1	..	..	1	1	..	..	..	..	1	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
New Jersey	152	..	..	3	1	1	..	..	..	1	1	..	..	1	5	..	2	1	2	..	5	..	..	..	1	..	..	..	..	..	..	2	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
New Mexico	31	..	..	..	4	2	..	..	..	1	..	..	4	1	..	2	1	2	..	2	..	1	..	..	2	..	1	..	..	..	..	1	..	..	1	1	..	..	..	..	50	3	..	8	..	4	..	..	3	..	..	7	..	5	..
New York	482	1	..	1	7	..	2	1	1	..	2	..	4	1	..	1	3	1	..	..	..	3	9	..	1	..	1	..	..	1	..	1	..	..	8	..	..	16	..	..	2	..	..	3	4	..	..	1	..	..	28	..	..	..
North Carolina	71	..	..	..	..	..	1	..	1	..	3	..	2	5	7	..	1	1	1	64	3	3	9	..	1	..	2	..	..	47	..	..	12	..	22	..	..	12	..	1	..	17	15	..	3	16	..	1	1	1	4	..	..	..
North Dakota	10	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	2	..	2	1	..	1	..	..	..	..	..	..	6	..	..	4	..	..	2	..	8	..	7	..	..	..	19	..	2	..	..	10	..	..	..
Ohio	124	..	..	1	2	1	..	..	..	..	1	..	3	4	3	3	6	3	..	3	..	15	..	..	18	..	1	..	..	1	..	10	..	..	2	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	4	..	..	..
Oklahoma	38	..	..	2	..	1	..	..	..	..	..	..	3	..	1	3	..	1	..	..	..	2	..	1	5	..	2	..	..	..	..	1	..	..	1	..	..	10	..	2	..	9	..	..	2	3	..	1	3	..	19	..	..	..
Oregon	17	..	..	..	1	..	..	..	..	..	..	..	2	..	1	1	..	..	..	1	..	1	1	..	1	..	1	..	..	..	..	1	..	..	2	..	..	..	..	..	..	2	3	..	1	3	..	1	1	..	3	..	..	..
Pennsylvania	81	1	..	..	1	..	1	1	..	..	..	..	2	1	3	1	..	2	..	3	1	1	1	..	1	..	1	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rhode Island	21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	1	..	1	..	..	13	..	8	3	..	6	..	1	..	..	1	..	1	1	1	..	1	..	1	..	..	..	..	..	..
South Carolina	18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
South Dakota	8	..	..	..	..	1	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tennessee	21	2	..	..	..	1	..	..	..	..	5	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Texas	138	1	..	11	3	3	..	..	..	..	3	..	12	3	1	9	2	22	1	3	..	5	4	5	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Utah	7	..	..	..	..	1	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	9	1	..	5	8	..	4	..	..	..	11	..	..	..	1	..	1	..	..	5	..	..	..
Vermont	21	..	..	..	..	..	1	..	..	..	..	..	1	..	1	..	..	..	..	..	..	2	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	3	..	3	..	..	..	..
Virginia	62	..	..	..	2	1	..	..	5	..	1	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	6	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Washington	51	..	..	..	6	2	..	..	..	..	..	..	..	..	..	4	2	..	6	..	..	..	..	..	1	..	..	..	3	..	..	2	1	..	2	..	..	4	..	1	..	8	2	..	..	..	1	1	..	2	10	..	..	..
West Virginia	41	..	..	1	..	..	1	..	..	..	..	..	..	..	6	..	1	..	2	..	2	..	2	..	2	1	5	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	16	..	..	..
Wisconsin	41	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	4	..	7	..	1	..	..	1	..	..	..	..	..	..	..	..	1	..	7	..	5	1	..	5	..	1	..	1	..	..	2	..	..	..	1	..	..	..
Wyoming	7	..	..	..	..	2	..	..	..	..	..	..	16	..	..	1	..	1	..	..	..	2	4	..	5	1	3	..	..	..	..	..	..	..	3	1	..	2	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..
U. S. Terr. and Possessions*	22	..	..	..	2	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Totals	2,902	8	1	37	50	36	7	6	14	2	36	3	155	35	70	67	49	67	10	149	15	79	65	13	111	6	87	0	2	75	0	175	29	2	154	27	17	95	2	23	9	149	61	7	17	87	9	14	36	2	17	673	8	29	5
Marginal Number		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54

* Alaska, Hawaii, Puerto Rico, Virgin Islands.

Twenty-two states licensed physicians who never failed a state board examination, while New York licensed 190, Massachusetts forty and New Jersey thirty-nine who previously failed. Licensure of candidates with failures occurred in twenty-six states, the District of Columbia, Hawaii and Puerto Rico but, with the exception of Massachusetts, New Jersey and New York, no state licensed more than fifteen.

REGISTRATION BY RECIPROCITY AND ENDORSEMENT

The number of physicians granted licenses to practice medicine and surgery without examination on presentation of satisfactory credentials are given in table 5. There were 2,902 so registered who presented licenses from other states, Canada and foreign countries, the certificate of the National Board of Medical Examiners, one of the government services, or other credentials.

Definite reciprocal relations are reported by twenty-four states. Twenty-six states, including five that have regularly established reciprocal relations, will register licentiates who present credentials which correspond to those required by their respective states at the time such licenses were issued. The medical practice acts of many give the examining board the privilege of using its discretion in determining the acceptability of a candidate. The reciprocity and endorsement policies of the various states are presented in table 6. In addition there is also indicated whether licenses are granted to diplomates of the National Board of Medical Examiners or to retired officers of the government services. Specific requirements such as professional practice, basic science certificate, oral examination and internship is recorded, as is also the fee demanded. Florida, Idaho, Massachusetts and Rhode Island do not have reciprocal or endorsement arrangements with any state. Massachusetts and Rhode Island, however, will register diplomates of the National Board of Medical Examiners by endorsement. Those desiring licenses by this method in Arizona, Arkansas, Colorado, Connecticut, District of Columbia, Iowa, Minnesota, Nebraska, Oklahoma, Oregon, Washington and Wisconsin are required to obtain a certificate from the board of examiners in the basic sciences before being eligible for licensure. Some states have additional requirements for graduates of schools outside the United States and Canada. Other requirements or exemptions are mentioned in footnotes.

In table 5 it will be noted that New York granted the greatest number of licenses by endorsement in 1938 (482), California the second highest (208), Michigan 166, New Jersey 152, Texas 138, Ohio 124, Illinois 110 and Massachusetts 105. All other states licensed fewer than 100 by this method. The largest group representing the same type of credentials were the 673 diplomates of the National Board of Medical Examiners. More than 100 physicians holding licenses in Illinois, Maryland, Missouri, New York, Ohio and Tennessee, respectively, were licensed in the various states. Twenty-nine physicians were certified on the basis of Canadian and foreign credentials. Only 175 physicians with New York licenses secured certificates elsewhere, while 482 were registered in New York on the basis of credentials. The number of physicians registered in New York on the basis of foreign credentials was twenty-one, whereas in 1937 it was 146. During the year the New York Board of Regents ruled that all would be required to pass examinations. The Regents' decision was appealed in a test case and the Supreme Court issued an order restraining the Regents from requiring foreign born physicians to pass an examination before practicing in New York. The Appellate Division of the Supreme Court supported the position taken by the Regents. The Regents are not endorsing any foreign licenses but requiring that all applicants take the regular medical examination.

One physician in the District of Columbia was licensed on the basis of German credentials by a special act of Congress. One was registered in Missouri on Canadian credentials. Five in New Hampshire were issued licenses by endorsement of credentials from Canada and Quebec one each and Germany three. The twenty-one in New York represented one with Russian credentials, two with Austrian and eighteen German degrees. One candidate in Vermont was certified on the basis of English credentials. Altogether, twenty-nine were licensed by five states.

Three states accepted credentials from Hawaii and Puerto Rico. One was endorsed by presentation of a Hawaiian license in California, and one in Montana and six in New York by endorsement of licenses issued in Puerto Rico. In addition, five were admitted to private practice in the Virgin Islands.

Not included in the table are forty-three osteopaths licensed by the board of medical examiners in five states, namely one in New Hampshire and thirty-seven in Texas granted the right to practice medicine and surgery, one each in Oregon and Wyoming licensed to practice osteopathy and surgery, and three granted this privilege in Wisconsin. Likewise excluded are those osteopaths granted licenses to practice medicine and surgery in California.

Of the five homeopathic boards in existence—Arkansas, Connecticut, Delaware, Louisiana and Maryland—only two issued licenses by endorsement, Connecticut and Delaware, which licensed two and one respectively. The Eclectic Board in Arkansas also registered one.

Diplomates of the National Board of Medical Examiners were registered in thirty-eight states, the District of Columbia, Alaska, Hawaii and Puerto Rico.

Maryland had the greatest number of its licentiates registered in any state, sixty-four, who were given the right to practice in New York. Alabama, Arizona, Connecticut, Delaware, Florida, Idaho, Montana, New Hampshire, North Dakota, Rhode Island, South Dakota, Utah, Washington and Wyoming had less than ten of their licentiates endorsed to other states. Two states had no physicians endorsed—Nevada and New Mexico. Arizona had only one endorsed, and Florida, New Hampshire, North Dakota, Rhode Island and Wyoming only two.

Included in the group at the side of the table listed as "U. S. Territories and Possessions" are Alaska, Hawaii, Puerto Rico and Virgin Islands.

A total of 2,902 physicians secured licenses by this method in 1938.

The physicians licensed by reciprocity and endorsement in 1938 and, in addition, forty-three osteopaths so licensed by medical examining boards are recorded by school of graduation and state or territory where licensed in table 7. All the four year medical schools in the United States (sixty-seven) and nine in Canada were represented. The largest number of graduates of any one school were from Harvard Medical School,

ninety-eight, who were licensed in twenty-nine states. Georgetown had eighty-seven licensed by this method in seventeen states, the University of Nebraska eighty-three in twenty-five states, and Northwestern seventy-seven in thirty states. Graduates of forty-two faculties of medicine in Europe and seven licensing corporations approved medical schools in the United States, forty-six graduates of nine approved medical schools in Canada, 115 graduates of European institutions, fifty-three of medical schools now extinct, twenty graduates of unapproved medical schools and forty-three osteopaths.

TABLE 6.—*Reciprocity*

Compilation of data furnished by state examining boards. This information is not guaranteed, as there may have been

Marginal Number	The Examining Board of	Reciprocates with, or Endorses Certificates Granted by: Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	Marginal Number
1	Alabama	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
2	Arizona	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
3	Arkansas (regular board)	+	..	..	+	+	..	..	+	..	+	..	+	+	+	+	+	+	..	+	..	+	+	+	+	..	+	+	..	+	+	3
4	California	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
5	Colorado	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5
6	Connecticut (regular board)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6
7	Delaware (regular board)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7
8	District of Columbia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8
9	Florida	No reciprocity or endorsement policies											..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9
10	Georgia	+	..	+	+	+	..	..	+	..	..	..	..	+	+	+	+	+	+	+	..	+	+	+	+	..	+	+	+	+	+	10
11	Idaho	No reciprocity or endorsement policies											..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11
12	Illinois	+	..	+	+	+	..	..	+	..	+	..	..	+	+	+	+	+	+	+	..	+	+	+	+	..	+	+	..	+	..	12
13	Indiana	+	..	+	+	+	..	..	+	..	+	..	[+][82]	..	+	+	+	+	+	+	..	+	+	+	+	..	+	+	..	+	+	13
14	Iowa	+	..	+	+	+	..	+	+	..	+	..	+	+	..	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	14
15	Kansas	+	+	+[19]	+	+	..	+	+	..	+	..	+	+	+	..	+	+	+	+	..	+	..	+	+	+	..	+	+	+	+	15
16	Kentucky	+	..	+	+	+	..	+	+	..	+	..	+	+	+	+	..	+	+	+	..	+	+	+	+	..	+	+	+	+	+	16
17	Louisiana (regular board)	+	+	+	+	+	..	+	+	..	+	..	+	+	+	+	+	..	+	+	..	+	+	+	+	..	+	+	+	+	+	17
18	Maine	..	..	..	+	+	..	+	+	..	+	..	+	+	+	+	+	+	..	+	..	+	+	..	+	+	+	+	+	+	+	+	18
19	Maryland (regular board)	+	..	+	+	..	..	+	+	..	+	..	+	+	+	+	+	+	+	..	..	+	+	+	+	+	+	+	+	+	+	+	19
20	Massachusetts	No reciprocal relations						..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20
21	Michigan	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	..	..	+	+	+	+	+	+	+	+	+	+	21
22	Minnesota	+	..	+	+	..	..	+	..	..	+	..	+	..	+	..	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	+	22
23	Mississippi	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	23
24	Missouri	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	24
25	Montana	+	+	+	+	+	..	+	+	..	..	..	..	+	+	+	+	..	+	+	..	+	+	+	+	..	+	+	+	..	+	25
26	Nebraska	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	26
27	Nevada	..	..	+[21]	+	+	..	..	..	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	..	+	+	..	+	..	..	27
28	New Hampshire	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	28
29	New Jersey	+	..	..	+	+	..	..	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	..	..	..	+	..	+	..	..	29
30	New Mexico	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	30
31	New York	+	..	..	+	..	..	+	..	..	..	..	..	+	+	..	..	..	..	+	..	..	+	..	..	..	..	+	..	+	..	31
32	North Carolina	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32
33	North Dakota	+	..	+	+	..	..	..	..	..	+	..	+	+	+	+	+	+	+	+	..	+	..	..	..	+	+	+	+	+	+	33
34	Ohio	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	+	34
35	Oklahoma	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	35
36	Oregon	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	36
37	Pennsylvania	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	37
38	Rhode Island	No reciprocal relations						..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	38
39	South Carolina	+	..	..	..	..	..	..	..	..	+	..	..	..	.	+	+	+	+	+	..	..	..	..	..	..	..	..	..	+	+	..	39
40	South Dakota	+	+	+	+	+	..	..	..	..	+	..	..	+	+	+	+	+	..	+	..	+	..	+	..	+	..	+	..	..	..	+	40
41	Tennessee	+	..	+	+	+	..	..	+	..	+	..	+	+	+	+	+	+	+	+	..	+	+	+	+	+	+	..	+	+	+	41
42	Texas	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	42
43	Utah	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43
44	Vermont	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	44
45	Virginia	+	..	+	+	..	..	+	+	..	+	..	..	+	+	+	+	+	+	..	+	+	+	..	+	..	..	+	+	+	45
46	Washington	+	..	..	+	+	..	..	..	..	+	..	..	..	+	..	+	+	..	+	..	..	+	+	+	+	+	..	..	..	..	..	46
47	West Virginia	+	..	+	..	..	..	+	+	..	+	..	+	+	+	+	+	..	+	..	+	+	+	+	+	+	+	..	+	..	47
48	Wisconsin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	48
49	Wyoming	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	49
50	Alaska	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..	..	50
51	Hawaii	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	51
52	Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	52

Some states have additional requirements for graduates of schools outside the United States and Canada.

1. 1st P, first papers required; +, full citizenship required.
2. In most cases there is a small additional recording or registration fee.
3. If state of original license grants similar privileges.
4. Internship accepted in lieu of one year's practice.
5. Professional practice required.
6. No professional practice required.
7. Just preceding application.
8. No basic science reciprocity—examination must be within the state.
9. Basic science certificate required either by reciprocity or examination in addition to basic science subjects of National Board.
10. Reserve officers not eligible.
11. Applicant's diplomate certificate must be dated not less than one year prior to the filing date in California of an application; applicant must also have been a resident of some state or territory of the United States for a period of at least one year after the date of his diplomate certificate.
12. Oral examination required when original license is ten or more years old.
13. Applicant must have resided in the state used as basis of application for one year after date on said certificate.
14. Oral examination required.
15. Unless in practice in another state for five years.
16. Six months of which must be just preceding application.
17. Practical, clinical examination required.

of Great Britain, three unapproved institutions and several osteopathic schools were licensed without examination. Graduates of thirty-six schools now extinct were also represented.

Of the 2,945 candidates licensed by reciprocity and endorsement, 2,668 were graduates of sixty-seven

CANDIDATES ADDED TO THE PROFESSION

Licentiates representing additions to the profession during 1938 are recorded in table 8. The figures represent candidates examined in 1938 and licensed; also those examined in previous years whose licenses were withheld and issued in 1938, and those certified on the

basis of the certificate of the National Board of Medical Examiners, government services, Canadian and foreign credentials. In the main they represent recent graduates. Altogether, 6,252 were added to the profession. The number removed by death annually approximates 4,000. These figures indicate that at least 2,000 were added to the medical profession in 1938. It is assumed that the great majority of those licensed are in practice. It is interesting to note that, of 9,493 licenses issued throughout the year, 6,252 are actual additions to the medical profession. The largest number in any one state added to the profession was in New York, 1,204; Illinois added 464 and Pennsylvania 452, while South Dakota added only two. More than 300 were added in California and Ohio. Between 200 and 300 were added to the physician population of Maryland, Massachusetts, Michigan, New Jersey and Texas. Indiana, Louisiana, Minnesota, Missouri, Tennessee, Virginia and Wisconsin increased their population of physicians by between 100 and 200. Thirty-one states, the District of Columbia, Alaska, Hawaii and Puerto Rico added less than 100. Of the number of licentiates representing additions to the medical profes-

(CONTINUED ON PAGE 1710)

and Endorsement Policies

changes of which this office has not been advised. For an authentic statement write directly to the medical board.

Marginal Number	Reciprocates with, or Endorses Certificates Granted by: New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Alaska	Puerto Rico	At the Discretion of the Board	National Board of Medical Examiners	U. S. Government Services	Requirements: Basic Science Certificate	Internship	Professional Practice	Citizenship [1]	Fees, Dollars [2]	Miscellaneous	Marginal Number
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[3]	+	+	..	+	1[4]	+	50	..	1
2	..	..	..	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	..	..	..	+	+[8]	+[8 6]	+[8]	..	3[4 7]	..	100	..	2
3	+	..	+	+	+	..	+	..	..	..	+	+	..	+	+	..	+	+	..	..	..	..	+[9]	..	+	..	1[4]	+	50[20]	..	3
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[12]	+[11]	+[10]	..	..	1[13]	..	100	..	4
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[9]	..	+	..	1[4]	1st P	50	..	5
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	+[14 6]	..	+[15]	..	3[4 16]	1st P	50	..	6
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[3]	+[5]	+	..	+	2	+	100	..	7
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[3]	+	+[5]	+	+	2[7]	..	50	..	8
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9
10	..	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	..	..	..	..	+	..	..	..	0	+	50	..	10
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11
12	..	..	+	+	+	+	+	..	..	..	+	+	+	+	+	..	+	+	+	..	..	..	+[17]	+[10 17]	..	+	1[4]	..	25	17	12
13	+	+	+	+	+	..	+	..	..	+	+	+	+	+	+	..	+	+	+	..	..	..	+	..	..	..	1[4]	+[33]	50	..	13
14	+	+	+	+	+	..	+	..	..	+	+	..	+	..	+	+	+	+	+	..	..	..	+	..	+	+	1[4]	+	50	..	14
15	..	+	+	+	+	..	+	..	+	+	+	+	+	+	+	..	+	+	+	..	..	..	+	..	..	..	1[4 7]	+	..[18]	..	15
16	..	.	..	+	+	..	+	..	+	+	+	+	+	+	+	..	+	+	..	..	..	..	+	..	..	..	1[4]	+	50	..	16
17	..	+	+	+	+	+	+	..	+	+	+	+	+	+	+	+	+	+	+	..	..	..	..	..	..	+	1[4]	1st P[19]	50	..	17
18	..	..	+	+	+	+	+	..	+	..	+	+	+	+	+	..	+	+	+	..	..	..	+[11]	..	..	..	1[4]	1st P	52	..	18
19	..	+	..	+	+	+	+	..	+	..	+	+	..	+	+	..	+	+	..	..	..	+	+	..	..	..	1[4]	1st P [20]	50	..	19
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..	0	..	25	..	20
21	..	+	+	+	+	+	+	..	+	+	+	+	+	+	+	..	+	+	+	..	..	+	+[35]	..	+[37]	+	1[4]	+	50	24	21
22	+	+	..	..	+	+	+	..	..	..	+	+	+	+	+	+	+	+	+	..	..	..	+	..	+	..	0	+	75	17	22
23	..	.	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	..	..	1[4]	1st P	50.25	..	23
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	..	+[38]	1[4]	+	50	..	24
25	..	+	+	+	+	..	..	+	..	+	..	+	+	..	+	+	+	+	+	..	+	..	+[14]	..	..	..	1[4]	+	75	..	25
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	+	..	1[4]	+	50[36]	..	26
27	+	..	..	+	+	+	+	..	..	+	+	..	+	+	..	..	+	+	..	+	..	..	+	..	..	+[33]	1[4]	+	100	12	27
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	+	..	+	0	..	20	..	28
29	+	..	+	+	+	..	+	..	..	..	..	+	+	+	+	..	+	+	..	..	..	+	+	..	..	+	0	1st P	100	..	29
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	+	..	..	1[4]	+	50	..	30
31	..	+	..	+	..	..	..	..	..	..	+	+	+	..	+	..	..	+	..	..	+	+	+	..	..	..	0	1st P	25	..	31
32	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	+	..	..	0	+	50	..	32
33	..	+	..	+	+	+	..	..	..	+	..	+	..	+	..	+	+	+	+	..	..	..	+	..	..	+	1	1st P	50[22]	14	33
34	+	+	+	..	+	+	+	..	+	+	+	+	+	+	+	..	+	+	+	+	..	..	+	..	..	..	1[4]	1st P	50	23	34
35	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	+	+	1[4]	+	100	..	35
36	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[9 36]	..	+	+	1[4]	1st P	100	..	36
37	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	..	+	2[24]	1st P	100	..	37
38	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	..	..	+	0	1st P	20	..	38
39	..	+	..	+	..	..	+	..	..	..	+	+	..	..	+	..	+	..	+	..	..	..	+	..	..	..	1[4]	+	50	..	39
40	..	+	+	+	+	+	..	..	+	..	+	+	+	..	+	+	+	+	+	..	..	..	+	+	+[38]	+	1	1st P	50	..	40
41	+	+	..	+	+	..	+	..	+	+	..	+	+	..	+	+	+	+	+	..	..	..	+	+	..	..	0	+	10	..	41
42	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	+	..	..	1[23]	+	50	..	42
43	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	+	..	+	0	1st P	50	..	43
44	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	..	+	0	..	50	..	44
45	+	+	..	+	+	..	+	..	+	+	+	+	..	+	..	+	+	+	..	..	..	+	+	+	..	..	2[26]	1st P	50	..	45
46	..	..	..	..	+	+	+	..	..	+	+	+	+	+	+	..	..	+	+	+	..	..	+[8]	..	+[8]	+	0	+	25	..	46
47	..	+[27]	+	+	+	..	+	..	+	+	+	+	+	+	+	..	..	+[28]	+	..	..	..	+	..	..	+	2[4]	..	100	..	47
48	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	..	+	+	+	1[29]	..	50[22]	..	48
49	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	+[14]	+	..	+	0	+	50	..	49
50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	+	0	..	100	..	50
51	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+[14]	..	..	..	..	..	25	..	51
52	+	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+[39]	..	+	0	+	25	..	52

18. Same as charged Kansas.
19. Regular and Homeopathic boards.
20. Required of graduates of foreign medical schools.
21. Regular board.
22. Fee same as applicant's state charges if more than $50.
23. Oral examination required if applicant's state requires it.
24. If an applicant passes the examination in the state from which he transfers after the completion of his internship, no practice is required.
25. Internship accepted if served in this state.
26. Internship accepted—considered equivalent to two years' practice.
27. Five years' practice.
28. Conditionally.
29. A two year internship is accepted.
30. License by National Board certificate at examination fee of $15 unless holding a license from another state.
32. Clinical examination required.
33. Reciprocity applicants only.
34. Supplemental examination required in certain cases when accepting the examination of a state with whom reciprocal relations have not been established.
35. May be licensed after a special (written) supplemental examination.
36. Fee for license on basis of National Board certificate $25.
37. For matriculants after Oct. 17, 1937.
38. After July 1, 1939.
39. While in active duty only.
40. Permanent license withheld until completion of citizenship.

TABLE 7.—*Candidates Licensed by Reciprocity and Endorsement—1938*

Marginal Number	SCHOOL	1 Alabama	2 Arizona	3 Arkansas	4 California	5 Colorado	6 Connecticut	7 Delaware	8 District of Columbia	9 Florida	10 Georgia	11 Idaho	12 Illinois	13 Indiana	14 Iowa	15 Kansas	16 Kentucky	17 Louisiana	18 Maine	19 Maryland	20 Massachusetts	21 Michigan	22 Minnesota	23 Mississippi	24 Missouri	25 Montana	26 Nebraska	27 Nevada	28 New Hampshire	29 New Jersey	30 New Mexico	31 New York	32 North Carolina	33 North Dakota	34 Ohio	35 Oklahoma	36 Oregon	37 Pennsylvania	38 Rhode Island	39 South Carolina	40 South Dakota	41 Tennessee	42 Texas	43 Utah	44 Vermont	45 Virginia	46 Washington	47 West Virginia	48 Wisconsin	49 Wyoming	50 U. S. Terr. & Poss.*	Totals	Marginal Number
	ARKANSAS																																																			
1	University of Arkansas School of Medicine	1	..	1	1	..	..	..	..	..	2	..	4	2	..	..	..	3	..	..	..	2	..	1	4	..	..	..	..	4	..	5	..	..	1	3	..	..	..	..	..	..	11	..	..	..	..	1	..	..	1	47	1
	CALIFORNIA																																																			
2	College of Medical Evangelists	1	1	..	3	4	..	..	1	..	1	..	1	..	3	..	3	..	..	3	1	4	..	..	3	3	..	..	..	2	3	2	..	2	2	1	1	1	2	..	..	1	1	..	1	..	7	..	..	..	5	63	2
3	Stanford University School of Medicine	..	1	..	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	8	3
4	University of California Medical School	..	..	..	2	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	4
5	University of Southern California School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	5
	COLORADO																																																			
6	University of Colorado School of Medicine	..	..	3	9	..	..	..	1	..	..	..	2	1	1	..	..	..	..	..	..	3	..	..	1	..	..	..	..	..	3	1	..	..	2	..	..	..	..	..	..	1	..	2	1	..	1	2	..	..	2	..	36	6
	CONNECTICUT																																																			
7	Yale University School of Medicine	..	..	..	3	..	12	..	..	..	..	..	1	..	..	..	..	..	..	1	4	3	..	..	..	..	..	..	..	2	..	14	..	..	4	..	..	1	..	..	..	..	..	..	1	1	1	..	..	..	..	48	7
	DISTRICT OF COLUMBIA																																																		
8	George Washington University School of Medicine	..	1	..	6	..	..	..	6	..	..	..	1	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	2	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	27	8
9	Georgetown University School of Medicine	..	..	..	2	..	2	..	16	..	..	..	1	..	..	..	..	..	1	..	5	4	2	..	..	..	1	2	..	..	5	..	32	..	1	4	..	..	3	5	..	..	..	..	..	1	..	4	..	..	1	..	87	9
10	Howard University College of Medicine	1	..	..	..	..	..	1	4	..	1	..	3	1	..	..	1	..	..	..	..	2	..	..	1	..	..	..	..	3	..	6	1	..	..	..	..	2	..	..	..	..	1	..	..	1	..	1	..	..	..	..	30	10
	GEORGIA																																																			
11	Emory University School of Medicine	2	..	..	1	..	..	..	3	..	2	..	1	..	1	..	2	..	..	..	..	2	..	..	1	..	..	..	..	..	1	6	2	..	1	..	..	..	1	..	..	..	1	..	..	1	..	..	..	..	..	28	11
12	University of Georgia School of Medicine	..	..	..	2	..	..	..	..	..	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	2	2	..	..	..	..	..	4	..	1	2	..	..	..	..	..	..	..	..	..	..	17	12
	ILLINOIS																																																		
13	Loyola University School of Medicine	..	2	..	..	..	..	..	..	..	..	..	3	4	2	1	..	..	..	..	..	4	1	..	..	1	1	..	..	..	1	1	..	..	1	..	..	2	..	..	..	2	..	..	..	1	..	..	2	..	..	29	13
14	Northwestern University Medical School	2	1	..	2	2	..	..	..	..	1	..	6	8	7	1	2	1	..	1	2	10	2	..	1	2	1	..	..	..	2	3	..	1	1	..	1	..	1	..	..	..	..	2	..	..	1	..	..	2	..	..	77	14
15	University of Chicago, Rush Medical College	..	1	..	4	4	..	..	..	..	1	..	3	9	3	1	1	2	..	2	2	5	2	..	..	1	..	..	..	..	..	6	..	..	6	..	2	1	..	1	..	1	..	..	..	..	..	1	..	2	..	1	62	15
16	University of Chicago, The School of Medicine of the Division of Biological Sciences	..	1	..	1	..	..	..	2	..	..	..	3	2	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	..	1	16	16
17	University of Illinois College of Medicine	1	1	..	6	1	..	..	..	..	..	..	4	..	7	2	1	1	..	1	..	5	2	..	3	1	..	..	1	..	..	1	1	1	..	3	..	1	..	..	..	2	7	..	..	..	1	..	8	..	..	62	17
	INDIANA																																																		
18	Indiana University School of Medicine	..	..	..	3	..	..	..	1	..	..	..	5	..	1	..	1	..	..	..	..	..	..	..	1	..	..	..	..	1	1	3	..	1	4	..	..	..	..	..	..	..	1	..	..	2	..	..	..	..	..	25	18
	IOWA																																																		
19	State University of Iowa College of Medicine	..	1	..	8	2	1	..	..	..	..	..	5	2	..	..	..	..	..	..	..	5	1	..	2	4	3	..	1	5	..	6	..	..	2	1	1	..	..	6	1	..	..	..	..	..	..	..	..	..	..	63	19
	KANSAS																																																		
20	University of Kansas School of Medicine	..	..	..	7	2	1	..	1	..	..	..	2	2	3	2	..	..	..	..	..	..	..	..	13	1	..	..	..	..	1	..	..	..	3	3	1	1	..	..	..	..	..	6	..	..	..	..	..	..	..	..	49	20
	KENTUCKY																																																		
21	University of Louisville School of Medicine	1	..	..	1	..	1	..	1	..	1	..	..	6	1	..	1	..	..	1	..	4	..	1	4	2	..	..	..	3	3	4	2	1	6	..	..	..	..	..	1	..	1	..	..	3	..	4	..	..	..	53	21
	LOUISIANA																																																		
22	Louisiana State University Medical Center	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	..	2	..	..	..	..	..	8	22
23	Tulane University of Louisiana School of Medicine	9	1	3	2	1	..	..	..	..	2	..	3	1	..	..	3	1	..	1	1	3	1	3	3	..	..	..	..	..	1	2	1	..	2	2	..	1	..	1	..	2	21	..	..	..	1	1	1	..	2	76	23
	MARYLAND																																																		
24	Johns Hopkins University School of Medicine	..	..	2	2	2	..	..	3	..	1	..	3	3	..	..	2	..	1	3	1	6	1	..	2	..	..	..	..	2	..	14	1	..	2	2	..	2	2	..	..	1	..	..	1	5	3	2	1	..	..	70	24
25	University of Maryland School of Medicine and College of Physicians and Surgeons	1	..	..	1	..	1	..	2	..	..	..	1	1	..	..	..	..	..	3	..	1	1	1	..	..	..	..	..	7	..	19	1	..	1	..	..	2	1	..	..	..	..	..	..	3	..	4	..	..	..	51	25
	MASSACHUSETTS																																																		
26	Boston University School of Medicine	..	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	19	..	..	..	..	..	..	..	..	3	..	5	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	31	26
27	Harvard Medical School	1	..	..	6	..	7	..	2	..	2	..	3	1	2	1	2	..	1	..	26	2	2	..	3	1	..	..	5	1	1	12	2	..	2	..	1	3	4	..	..	1	1	..	2	..	..	..	..	1	..	..	98	27
28	Tufts College Medical School	..	..	..	3	..	4	..	1	..	1	..	..	..	..	..	..	..	1	..	31	1	..	..	..	..	..	..	..	7	3	..	9	1	..	1	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	66	28
	MICHIGAN																																																		
29	University of Michigan Medical School	2	..	..	6	1	1	..	1	..	..	..	3	5	1	1	2	1	2	1	..	2	..	1	..	..	1	..	1	2	..	3	1	1	11	2	1	1	..	..	..	..	6	..	..	2	1	..	1	1	1	66	29
30	Wayne University College of Medicine	1	..	..	2	..	..	..	..	..	..	..	..	..	1	..	2	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	3	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	14	30
	MINNESOTA																																																		
31	University of Minnesota Medical School	..	..	..	8	1	..	..	..	..	1	..	2	..	6	1	1	2	..	..	..	3	4	..	..	5	..	1	..	1	..	7	1	..	..	..	..	1	..	..	..	1	3	..	..	..	3	..	4	..	..	56	31
	MISSOURI																																																		
32	St. Louis University School of Medicine	1	1	2	8	..	..	..	1	..	1	..	4	4	..	5	1	..	1	1	..	2	..	..	1	1	..	..	1	2	..	9	..	..	17	1	..	..	..	..	..	..	2	..	..	1	2	..	1	1	..	71	32
33	Washington University School of Medicine	2	1	1	9	2	..	..	..	..	..	..	7	..	2	2	..	1	..	1	2	3	1	..	3	2	..	..	..	1	..	3	1	..	3	3	1	1	..	..	..	1	1	2	..	..	1	..	5	..	2	64	33

* U. S. Terr. & Poss. = U. S. Territories and Possessions

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(CONTINUED FROM PAGE 1707)

sion during 1938, 5,755 secured this privilege by examination and 497 by the endorsement of credentials. Those licensed by endorsement consist of a few licensed on foreign credentials and to a large extent diplomates of the National Board of Medical Examiners. Figures for three previous years and 1938 are shown here for comparison:

Licentiates Representing Additions to the Medical Profession in Four Years

Year	Examination	Reciprocity and Endorsement	Total
1935	5,098	411	5,509
1936	5,546	628	6,174
1937	5,808	602	6,410
1938	5,755	497	6,252

In 1935 there were 5,098 added by means of examination and 411 by endorsement of credentials, a total of 5,509. In 1936 there were 665 more added than in 1935; in 1937, 236 more than in 1936 and 901 more than in 1935. In 1938 there were 158 fewer than in 1937 but seventy-eight more than in 1936 and 743 more than in 1935. Physicians were added in Alaska, Hawaii and Puerto Rico in 1938.

TABLE 8.—*Licentiates Representing Additions to the Medical Profession—1938*

	Examination	Reciprocity and Endorsement	Total
Alabama	25	..	25
Arizona	11	..	11
Arkansas	73	..	73
California	361	9	370
Colorado	73	1	74
Connecticut	54	30	84
Delaware	7	..	7
District of Columbia	25	12	37
Florida	34	..	34
Georgia	69	4	73
Idaho	9	..	9
Illinois	456	8	464
Indiana	104	2	106
Iowa	87	3	90
Kansas	87	..	87
Kentucky	79	5	84
Louisiana	153	..	153
Maine	27	1	28
Maryland	218	8	226
Massachusetts	147	76	223
Michigan	193	7	200
Minnesota	155	8	163
Mississippi	32	1	33
Missouri	166	6	172
Montana	3	1	4
Nebraska	84	..	84
Nevada	3	..	3
New Hampshire	13	8	21
New Jersey	234	15	249
New Mexico	2	1	3
New York	1,027	177	1,204
North Carolina	83	4	87
North Dakota	5	2	7
Ohio	345	15	360
Oklahoma	39	..	39
Oregon	42	2	44
Pennsylvania	438	14	452
Rhode Island	16	13	29
South Carolina	39	2	41
South Dakota	2	..	2
Tennessee	178	5	183
Texas	192	35	227
Utah	11	..	11
Vermont	18	4	22
Virginia	124	1	125
Washington	56	7	63
West Virginia	28	..	28
Wisconsin	105	3	108
Wyoming	3	..	3
U. S. Territories and Possessions*	20	7	27
Totals	5,755	497	6,252

* Alaska, Hawaii, Puerto Rico.

Table 9 records the licentiates representing additions to the medical profession grouped in nine geographic divisions in 1938; namely the New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain and Pacific states as well as Alaska, Hawaii and Puerto Rico. The largest number, 1,905, was added to the Middle Atlantic group, the East North Central 1,238, the South Atlantic 658, the West North Central 605, the West South Central 492, the Pacific 477, the New England group of states 407, the East South Central 325, and the Mountain division 118. Thirteen each were added in Hawaii and Puerto Rico and one in Alaska.

TABLE 9.—*Licentiates Representing Additions to the Medical Profession Grouped in Geographic Divisions—1938*

	Examination	Reciprocity and Endorsement	Total
New England			
Maine	27	1	28
New Hampshire	13	8	21
Vermont	18	4	22
Massachusetts	147	76	223
Rhode Island	16	13	29
Connecticut	54	30	84
	275	132	407
Middle Atlantic			
New York	1,027	177	1,204
New Jersey	234	15	249
Pennsylvania	438	14	452
	1,699	206	1,905
East North Central			
Ohio	345	15	360
Indiana	104	2	106
Illinois	456	8	464
Michigan	193	7	200
Wisconsin	105	3	108
	1,203	35	1,238
West North Central			
Minnesota	155	8	163
Iowa	87	3	90
Missouri	166	6	172
North Dakota	5	2	7
South Dakota	2	..	2
Nebraska	84	..	84
Kansas	87	..	87
	586	19	605
South Atlantic			
Delaware	7	..	7
Maryland	218	8	226
District of Columbia	25	12	37
Virginia	124	1	125
West Virginia	28	..	28
North Carolina	83	4	87
South Carolina	39	2	41
Georgia	69	4	73
Florida	34	..	34
	627	31	658
East South Central			
Kentucky	79	5	84
Tennessee	178	5	183
Alabama	25	..	25
Mississippi	32	1	33
	314	11	325
West South Central			
Arkansas	73	..	73
Louisiana	153	..	153
Oklahoma	39	..	39
Texas	192	35	227
	457	35	492
Mountain			
Montana	3	1	4
Idaho	9	..	9
Wyoming	3	..	3
Colorado	73	1	74
New Mexico	2	1	3
Arizona	11	..	11
Utah	11	..	11
Nevada	3	..	3
	115	3	118
Pacific			
Washington	56	7	63
Oregon	42	2	44
California	361	9	370
	459	18	477
Territories and Possession			
Alaska	..	1	1
Hawaii	8	5	13
Puerto Rico	12	1	13
	20	7	27
Totals	5,755	497	6,252

In table 10 those representing additions to the medical profession are arranged by schools; the same as those examined are listed in table 2, existing approved medical schools in the United States and Canada, foreign faculties of medicine, schools now extinct and unapproved schools and undergraduates.

The 6,252 physicians representing additions to the medical profession included graduates from the sixty-seven approved medical schools of the United States, eight approved schools in Canada, and others. The greatest numbers from any one school were 152 from the University of Illinois College of Medicine, 146 from Rush Medical College and 145 from Jefferson Medical College. Of the United States schools the Albany Medical College had the fewest, twenty-five, while only two were represented from the University of Alberta Faculty of Medicine. McGill University Faculty of Medicine added fifty-eight of its graduates to the physician population of the United States. From the United States schools there were 4,752 graduates added to the profession by examination and 413 by reciprocity or endorsement of credentials, a total of 5,165. From the Canadian schools 135 were added, by examination and by reciprocity or endorsement sixteen. There were 668 graduates of foreign faculties of medicine, two from extinct medical schools and 282 unapproved graduates and undergraduates. Altogether there were 5,755 graduates of all schools examined, 497 by reciprocity or endorsement, a total of 6,252.

TABLE 10.—*Licentiates Representing Additions to the Medical Profession Classified by Schools, 1938*

School	Examination	Reciprocity and Endorsement	Total
ARKANSAS			
University of Arkansas School of Medicine	80	1	81
CALIFORNIA			
College of Medical Evangelists	83	17	100
Stanford University School of Medicine	67	1	68
University of California Medical School	59	..	59
University of Southern California School of Medicine	43	..	43
COLORADO			
University of Colorado School of Medicine	45	1	46
CONNECTICUT			
Yale University School of Medicine	7	30	37
DISTRICT OF COLUMBIA			
George Washington University School of Medicine	60	4	64
Georgetown University School of Medicine	90	43	133
Howard University College of Medicine	30	1	31
GEORGIA			
Emory University School of Medicine	53	1	54
University of Georgia School of Medicine	34	..	34
ILLINOIS			
Loyola University School of Medicine	107	2	109
Northwestern University Medical School	129	4	133
University of Chicago, Rush Medical College	142	4	146
University of Chicago, The School of Medicine of the Division of Biological Sciences	36	2	38
University of Illinois College of Medicine	150	2	152
INDIANA			
Indiana University School of Medicine	86	..	86
IOWA			
State University of Iowa College of Medicine	90	..	90
KANSAS			
University of Kansas School of Medicine	67	1	68
KENTUCKY			
University of Louisville School of Medicine	95	5	100
LOUISIANA			
Louisiana State University Medical Center	57	..	57
Tulane University of Louisiana School of Medicine	117	2	119
MARYLAND			
Johns Hopkins University School of Medicine	81	6	87
University of Maryland School of Medicine and College of Physicians and Surgeons	98	2	100
MASSACHUSETTS			
Boston University School of Medicine	20	21	41
Harvard Medical School	76	55	131
Tufts College Medical School	61	37	98
MICHIGAN			
University of Michigan Medical School	93	2	95
Wayne University College of Medicine	79	..	79
MINNESOTA			
University of Minnesota Medical School	121	5	126
MISSOURI			
St. Louis University School of Medicine	104	5	109
Washington University School of Medicine	87	6	93
NEBRASKA			
Creighton University School of Medicine	63	1	64
University of Nebraska College of Medicine	79	2	81
NEW YORK			
Albany Medical College	20	5	25
Columbia University College of Phys. and Surgs.	78	12	90
Cornell University Medical College	56	17	73
Long Island College of Medicine	74	6	80
New York Medical College and Flower Hospital	27	38	65
New York University College of Medicine	115	9	124
Syracuse University College of Medicine	36	3	39
University of Buffalo School of Medicine	47	3	50
University of Rochester School of Medicine	42	..	42
NORTH CAROLINA			
Duke University School of Medicine	14	19	33
OHIO			
Ohio State University College of Medicine	92	..	92
University of Cincinnati College of Medicine	67	..	67
Western Reserve University School of Medicine	62	1	63
OKLAHOMA			
University of Oklahoma School of Medicine	53	..	53
OREGON			
University of Oregon Medical School	55	1	56
PENNSYLVANIA			
Hahnemann Medical College and Hospital of Phila.	123	1	124
Jefferson Medical College of Philadelphia	142	3	145
Temple University School of Medicine	103	2	105
University of Pennsylvania School of Medicine	131	7	138
University of Pittsburgh School of Medicine	60	..	60
Woman's Medical College of Pennsylvania	24	3	27
SOUTH CAROLINA			
Medical College of the State of South Carolina	41	1	42
TENNESSEE			
Meharry Medical College	37	..	37
University of Tennessee College of Medicine	92	..	92
Vanderbilt University School of Medicine	53	2	55
TEXAS			
Baylor University College of Medicine	80	..	80
University of Texas School of Medicine	78	..	78
VERMONT			
University of Vermont College of Medicine	25	13	38
VIRGINIA			
Medical College of Virginia	81	1	82
University of Virginia Department of Medicine	53	..	53
WISCONSIN			
Marquette University School of Medicine	57	3	60
University of Wisconsin Medical School	45	..	45
CANADA			
Dalhousie University Faculty of Medicine	13	2	15
Laval University Faculty of Medicine	..	..	..
McGill University Faculty of Medicine	49	9	58
Queen's University Faculty of Medicine	17	..	17
University of Alberta Faculty of Medicine	2	..	2
University of Manitoba Faculty of Medicine	8	..	8
University of Montreal Faculty of Medicine	3	2	5
University of Toronto Faculty of Medicine	21	3	24
University of Western Ontario Medical School	6	..	6
Foreign Medical Faculties	638	30	668
Extinct Medical Faculties	1	1	2
Unapproved Schools and Undergraduates	245	37	282
Totals	5,755	497	6,252

STATE REQUIREMENTS OF PRELIMINARY EDUCATION

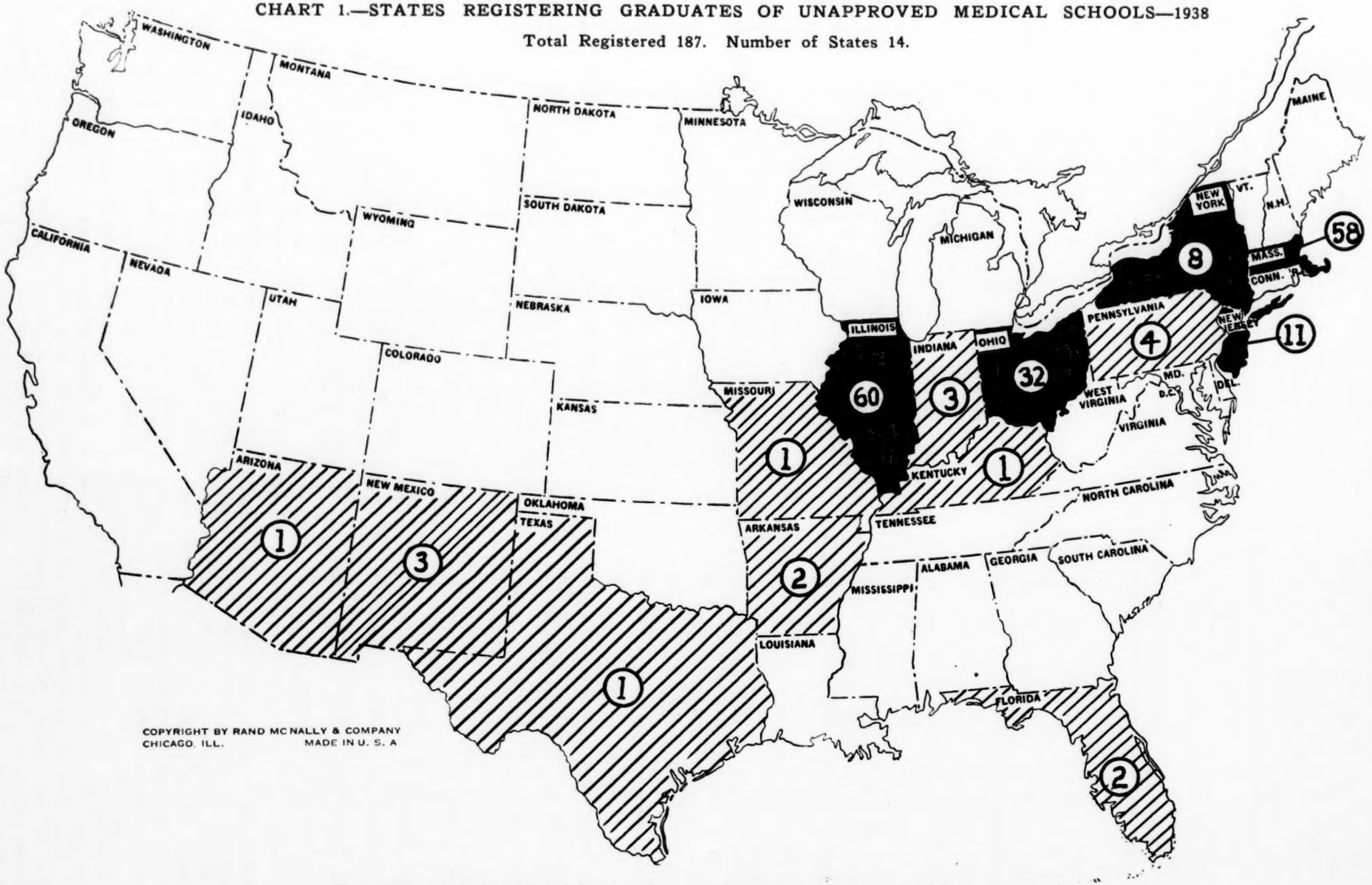
Since 1918 the minimum requirement of preliminary education exacted by the Council on Medical Education and Hospitals in its Essentials of an Acceptable Medical School has been two years of college work. Six states, however, have not yet revised or amended their statutes to conform with these prerequisites, although with one exception these states do not as a rule license other than graduates of approved schools (table 11).

REQUIRED HOSPITAL INTERNSHIPS

The medical schools and licensing boards requiring or planning to require a hospital internship for state licensure and the M.D. degree, respectively, are shown in tables 12 and 13. The effective date of the requirement is also shown in table 13.

CHART 1.—STATES REGISTERING GRADUATES OF UNAPPROVED MEDICAL SCHOOLS—1938

Total Registered 187. Number of States 14.



The states in black registered more than 5 such candidates, those shaded 5 or less.

As revealed in table 12, twenty-one states, the District of Columbia, Alaska, and Puerto Rico require that all applicants for licensure possess a hospital internship. The first state exacting this requirement was Pennsylvania in 1914. The requirement in Alabama and Louisiana became effective in 1939. In addition, other states require the internship of graduates of medical faculties abroad and reciprocity or endorsement applicants. These data are found in tables 6 and 20.

TABLE 11.—*State Requirements of Preliminary Training*

Two Years of College		
Alabama	Maine	Oregon
Arizona	Maryland	Pennsylvania
Arkansas	Michigan	Rhode Island
Colorado	Minnesota	South Carolina
Delaware	Mississippi	South Dakota
District of Columbia	Montana	Tennessee
Florida	Nevada	Texas
Georgia	New Hampshire	Utah
Idaho	New Jersey	Vermont
Illinois	New Mexico	Virginia
Indiana	New York	Washington
Iowa	North Carolina	West Virginia
Kansas	North Dakota	Wisconsin
Kentucky	Oklahoma	Wyoming
Louisiana		
One Year of College		
California		Connecticut
High School Graduation or Its Equivalent		
Massachusetts	Missouri	Nebraska
		Ohio

TABLE 12.—*Internship Required by Medical Licensing Boards of All Candidates* *

Alabama	Michigan	Rhode Island
Alaska	New Hampshire	South Dakota
Delaware	New Jersey	Utah
District of Columbia	North Dakota	Vermont
Idaho	Oklahoma	Washington
Illinois	Oregon	West Virginia
Iowa	Pennsylvania	Wisconsin
Louisiana	Puerto Rico	Wyoming

* In addition some states require the internship of graduates of medical faculties abroad and reciprocity or endorsement applicants. See tables 6 and 20.

TABLE 13.—*Internship Required by Medical Schools*

	Effective Date
University of California Medical School	1919
College of Medical Evangelists	1927
University of Southern California School of Medicine	1933
Stanford University School of Medicine	1919
Loyola University School of Medicine	1922
Northwestern University Medical School	1920
University of Illinois College of Medicine	1922
Louisiana State University Medical Center	1934
Wayne University College of Medicine	1924
University of Minnesota Medical School	1915
Duke University School of Medicine*	1932
University of Cincinnati College of Medicine	1926
Marquette University School of Medicine	1920
Canada	
University of Manitoba Faculty of Medicine	
Dalhousie University Faculty of Medicine	
McGill University Faculty of Medicine	
University of Montreal Faculty of Medicine	

* Requires a two year internship.

Thirteen schools in the United States and four in Canada exact the internship requisite. A few of the medical schools will accept research or other clinical work in lieu of the internship.

CANDIDATES EXAMINED FROM 1934 TO 1938 INCLUSIVE

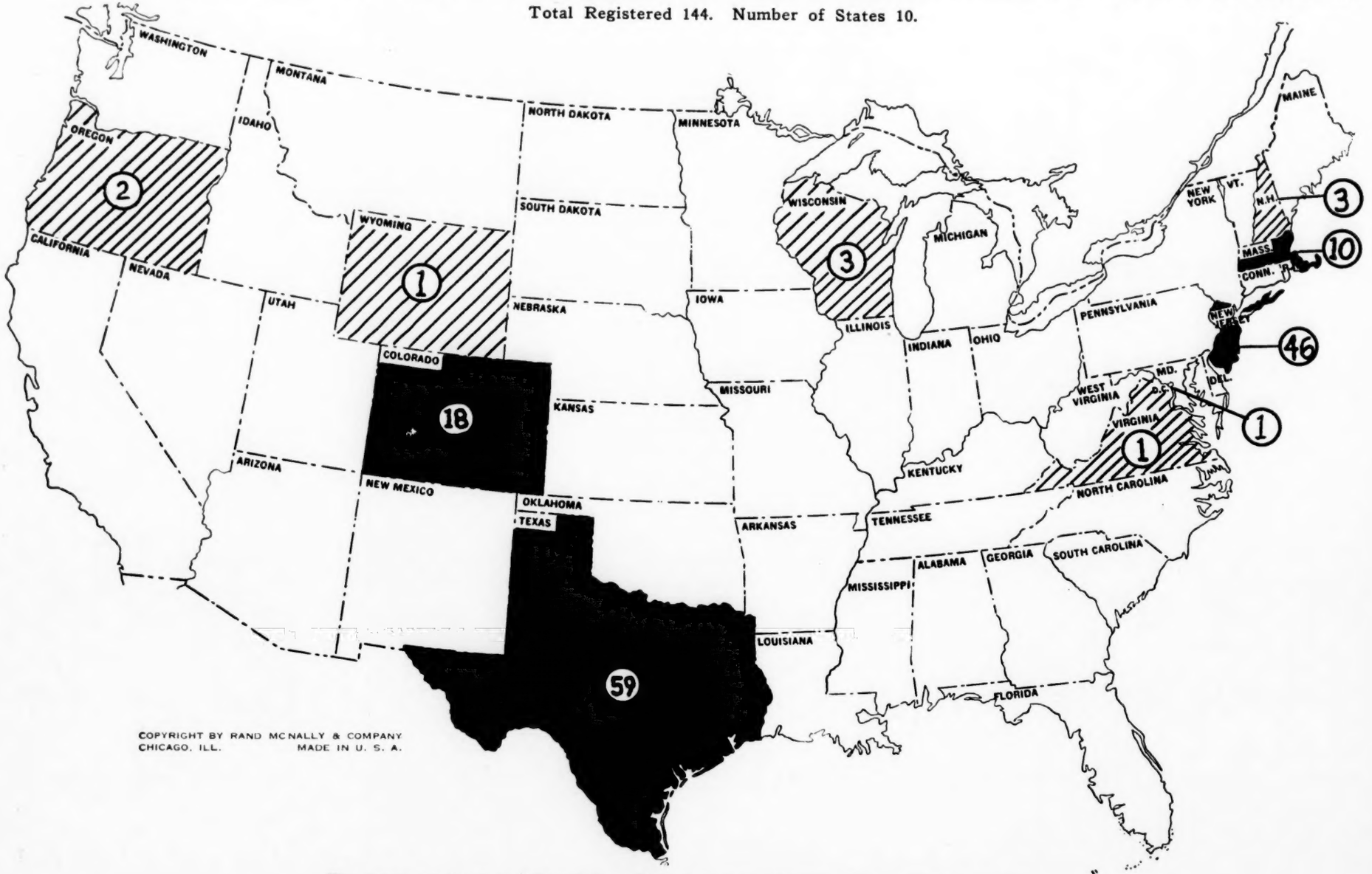
In table 14 are listed the number of candidates examined in the various states, territories and possessions in the last five years, 1934-1938 inclusive, showing those who passed and failed. In this period New York licensed 4,793 candidates, Pennsylvania 2,511, Illinois 2,240, California 1,751, Ohio 1,557, Massachusetts 1,214, Michigan 1,143, New Jersey 1,056 and Maryland 1,036. Thirty-one states licensed less than 500 and eleven less than 100. The smallest number (nine) were examined in New Mexico. The percentage of candidates who failed in the examinations in the past five years is given in the last column. The percentage of failures in all states has increased from 8.4 in 1934 to 11.7 in 1938. In the five year period, 47.2 per cent of the applicants failed in Massachusetts. The high percentage in this state is due to the fact that by law the licensing board is required to admit to its examination the graduates of unapproved schools, many of whom repeatedly fail. Connecticut had 21.6 per cent failures in five years and Florida 19.7 per cent. The third highest proportion of failures was in New York with 21.3 per cent. The comparatively high percentage in this state is occasioned by the fact that New York admits a great many graduates of foreign medical schools to its licensing examination. Florida has no reciprocal relations with any state, all candidates applying being required to take the licensing examination. Graduates of earlier years experience difficulty in passing examinations. On the other hand, Arkansas, Nebraska, New Hampshire, New Mexico, North Carolina, Oklahoma and Oregon—seven states

TABLE 14.—*Candidates Examined—1934-1938, Inclusive*

	1934		1935		1936		1937		1938		Totals for Five Years		
	Passed	Failed	Passed	Failed	Passed	Failed	Passed	Failed	Passed	Failed	Passed	Failed	Percentage Failed
Alabama	20	0	37	0	23	4	26	1	29	0	135	5	3.6
Arizona	7	2	8	2	26	9	14	2	15	0	70	15	17.6
Arkansas	53	0	42	0	46	0	48	0	72	0	261	0	0.0
California	303	16	328	14	369	18	349	20	402	15	1,751	83	4.5
Colorado	66	2	59	1	79	1	76	3	78	3	358	10	2.7
Connecticut	70	12	63	13	76	30	80	21	73	24	362	100	21.6
Delaware	14	7	13	5	17	0	14	2	14	0	72	14	16.3
Dist. Columbia	50	1	43	1	32	1	41	0	33	0	110	3	1.5
Florida	105	27	135	24	154	44	164	38	153	41	711	174	19.7
Georgia	80	0	88	2	89	0	83	0	72	0	412	2	0.5
Idaho	13	0	7	1	13	0	20	0	28	0	81	1	1.2
Illinois	368	13	423	10	471	6	488	5	490	12	2,240	46	2.0
Indiana	143	4	115	4	118	0	123	2	108	1	607	11	1.8
Iowa	100	0	77	1	103	0	88	0	95	11	463	12	2.5
Kansas	98	0	95	0	96	0	82	0	93	1	464	1	0.2
Kentucky	80	2	81	0	84	0	81	1	81	1	407	4	1.0
Louisiana	122	0	134	0	133	1	173	1	184	2	746	4	0.5
Maine	35	0	45	1	53	0	58	2	39	7	230	10	4.2
Maryland	204	17	194	28	202	34	209	27	227	38	1,036	144	12 2
Massachusetts	236	170	199	239	271	239	301	219	207	220	1,214	1,087	47.2
Michigan	225	2	244	1	238	0	211	1	225	1	1,143	5	0.4
Minnesota	159	0	173	0	191	1	219	0	219	2	961	3	0.3
Mississippi	28	1	30	1	22	4	22	2	31	1	133	9	6.3
Missouri	186	2	214	8	202	3	168	12	174	3	944	28	2 9
Montana	9	0	8	0	15	0	4	1	11	0	47	1	2.1
Nebraska	86	0	90	0	75	0	79	0	85	0	415	0	0 0
Nevada	5	0	3	1	0	0	5	0	5	0	18	1	5.3
New Hampshire	6	0	4	0	24	0	17	0	16	0	67	0	0.0
New Jersey	175	10	182	5	168	6	250	33	281	53	1,056	107	9.2
New Mexico	1	0	1	0	3	0	2	0	2	0	9	0	0.0
New York	834	193	879	195	932	249	1,070	291	1,078	372	4,793	1,300	21.3
North Carolina	75	0	65	0	64	0	83	0	85	0	372	0	0.0
North Dakota	12	1	14	1	14	0	13	0	15	2	68	4	5.6
Ohio	261	6	295	3	312	2	347	5	342	11	1,557	27	1.7
Oklahoma	73	0	62	0	70	0	49	0	46	0	300	0	0.0
Oregon	28	0	55	0	48	0	58	0	53	0	242	0	0.0
Pennsylvania	466	10	464	6	541	1	528	4	512	9	2,511	30	1.2
Rhode Island	34	3	53	4	22	7	38	7	26	1	173	22	11.3
South Carolina	46	0	49	0	32	0	46	1	39	1	212	2	0.9
South Dakota	10	0	20	0	15	0	17	2	8	0	70	2	2.8
Tennessee	173	0	181	1	178	1	207	1	179	3	918	6	0.7
Texas	165	2	188	4	178	19	181	19	200	26	912	70	7.1
Utah	20	0	20	1	23	0	10	0	12	0	85	1	1.2
Vermont	30	0	26	0	38	0	26	0	26	1	146	1	0.7
Virginia	132	4	109	1	110	0	150	2	127	0	628	7	1.1
Washington	45	0	44	0	58	1	57	0	72	0	276	1	0.4
West Virginia	25	0	38	0	59	0	60	1	65	1	247	2	0.8
Wisconsin	118	4	111	0	111	1	118	0	114	0	572	5	0.9
Wyoming	1	1	3	0	1	0	2	1	7	0	14	2	12.5
U.S. Terr. and Possessions	29	4	40	6	21	12	39	4	34	9	163	35	17.7
Total examined	6,140		6,435		6,914		7,325		7,454		34,268		
Passed	5,624		5,851		6,220		6,594		6,582		30,871		
Failed	516		584		694		731		872		3,397		
Percentage failed	8.4		9.1		10.0		10.0		11.7		9.9		

CHART 2.—MEDICAL LICENSING BOARDS REGISTERING OSTEOPATHS TO PRACTICE MEDICINE, SURGERY OR BOTH—1938

Total Registered 144. Number of States 10.



The states in black registered more than 5 such candidates, those shaded 5 or less.

—had no failures. Alabama, California, Colorado, the District of Columbia, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Michigan, Minnesota, Missouri, Montana, Ohio, Pennsylvania, South Carolina, South Dakota, Tennessee, Utah, Vermont, Virginia, Washington, West Virginia and Wisconsin—twenty-eight states—had less than 5 per cent of failures. A total of 34,268 candidates were examined in the five years from 1934 to 1938 inclusive, of whom 30,871 passed and 3,397 failed, 9.9 per cent. These figures represent examinations given and not individuals. A candidate who fails more than once in a given year is counted as only one failure, but should he fail in one of the succeeding years in another state he is counted in that year also. Likewise, if a candidate fails and later passes, whether in the same or a later year, he is counted as failed and passed. With a total of 3,397 failures for the five year period, it seems likely that there were approximately 30,000 individuals

TABLE 15.—*Registration—1904-1938*

Year	All Candidates Examined			Registered Without Written Examination	Total Registered
	Examined	Passed	Percentage Failed		
1904	7,055	5,692	19.3	1,004	6,696
1905	7,178	5,688	20.8	394	6,082
1906	8,038	6,371	20.7	1,502	7,873
1907	7,278	5,730	21.3	1,427	7,157
1908	7,775	6,089	21.7	1,284	7,373
1909	7,295	5,865	19.6	1,381	7,246
1910	7,009	5,717	18.4	1,640	7,357
1911	6,964	5,582	19.8	1,243	6,825
1912	6,880	5,467	20.5	1,272	6,739
1913	6,452	5,252	18.6	1,292	6,544
1914	5,579	4,379	21.5	1,439	5,818
1915	5,334	4,507	15.5	1,399	5,906
1916	4,876	4,149	14.9	1,353	5,502
1917	4,753	4,084	14.1	1,360	5,444
1918	3,666	3,183	13.2	1,047	4,230
1919	4,750	4,074	14.2	2,545	6,619
1920	4,795	4,061	15.3	2,558	6,619
1921	4,824	4,227	12.4	2,185	6,412
1922	4,031	3,539	12.2	2,073	5,612
1923	4,726	4,027	14.8	2,403	6,430
1924	5,390	4,754	11.8	1,918	6,672
1925	5,999	5,447	9.2	1,860	7,307
1926	5,766	5,310	7.9	1,951	7,261
1927	5,382	4,995	7.2	2,174	7,169
1928	5,452	5,084	6.8	2,227	7,311
1929	5,627	5,280	6.2	2,419	7,699
1930	5,563	5,247	5.7	2,396	7,613
1931	5,608	5,260	6.2	2,212	7,472
1932	5,666	5,238	7.6	1,884	7,122
1933	5,670	5,241	7.6	1,989	7,230
1934	6,140	5,624	8.4	2,160	7,784
1935	6,435	5,851	9.1	2,195	8,046
1936	6,914	6,220	10.0	2,764	8,984
1937	7,325	6,594	10.0	3,186	9,780
1938	7,454	6,582	11.7	2,945	9,527

examined. It is to be assumed that the majority of those who fail are later reexamined and licensed in some state. This figure gives a fair estimate of the number of physicians added to the profession each year. On page 1710 will be found exact totals for several years.

REGISTRATION 1904-1938

A study of totals and percentages for thirty-five years (1904-1938) is presented in table 15. The number (6,582) who passed in 1938 was twelve less than in 1937 but 362 more than in 1936 and 890 more than in 1904. The number registered without examination, 2,945, was 241 less than in 1937. However, contrasting these figures with those for 1904 will show the great use being made of this system of licensure. By both methods, examination and endorsement of credentials, 9,527 were registered, 253 less than in 1937. The number registered in 1937, 9,780, represented the largest number of candidates registered in thirty-five years. Of those examined in 1938, 11.7 per cent failed as compared with 21.7 per cent in 1908. The failures in recent years represent to a large extent graduates of unapproved schools and foreign faculties. They are responsible also for the increase in the percentage of failures in 1938 as compared with the last four or five years.

While these figures represent those registered in the years given, they do not in all states represent the number licensed in a given year. Licenses are withheld in many states, as indicated in the text describing table 1.

TABLE 16.—*Graduates of Approved Schools and Others Registered 1922-1938*

Year	Graduates of Approved Schools		Others		Totals
	Number	Per Cent	Number	Per Cent	
1922	4,519	80.5	1,093	19.5	5,612
1923	5,196	80.8	1,234	19.2	6,430
1924	5,685	85.2	987	14.8	6,672
1925	6,313	86.4	994	13.6	7,307
1926	6,438	88.7	823	11.3	7,261
1927	6,410	89.4	759	10.6	7,169
1928	6,584	90.1	727	9.9	7,311
1929	7,002	91.0	697	9.0	7,699
1930	7,011	92.1	602	7.9	7,613
1931	6,931	92.8	541	7.2	7,472
1932	6,675	93.7	447	6.3	7,122
1933	6,774	93.7	456	6.3	7,230
1934	7,170	92.1	614	7.9	7,784
1935	7,362	91.5	684	8.5	8,046
1936	7,922	88.2	1,062	11.8	8,984
1937	8,371	85.6	1,409	14.4	9,780
1938	8,300	87.1	1,227	12.9	9,527

There appears to be no marked increase or decrease in the total number of candidates registered from 1904 to 1933, but from 1934 to 1937 the number registered has been markedly increasing although there was a decrease in 1938 of 253 as compared with 1937. However, the number licensed without examination since 1906 has been increasing, owing to the almost universal recognition of the certificate of the National Board of Medical Examiners. The decrease in the number registered in 1918 was due to the sudden withdrawal of physicians and recent graduates from civilian life. Again in 1922 there was a notable reduction, this figure resulting from the small number that began the study of medicine in 1918.

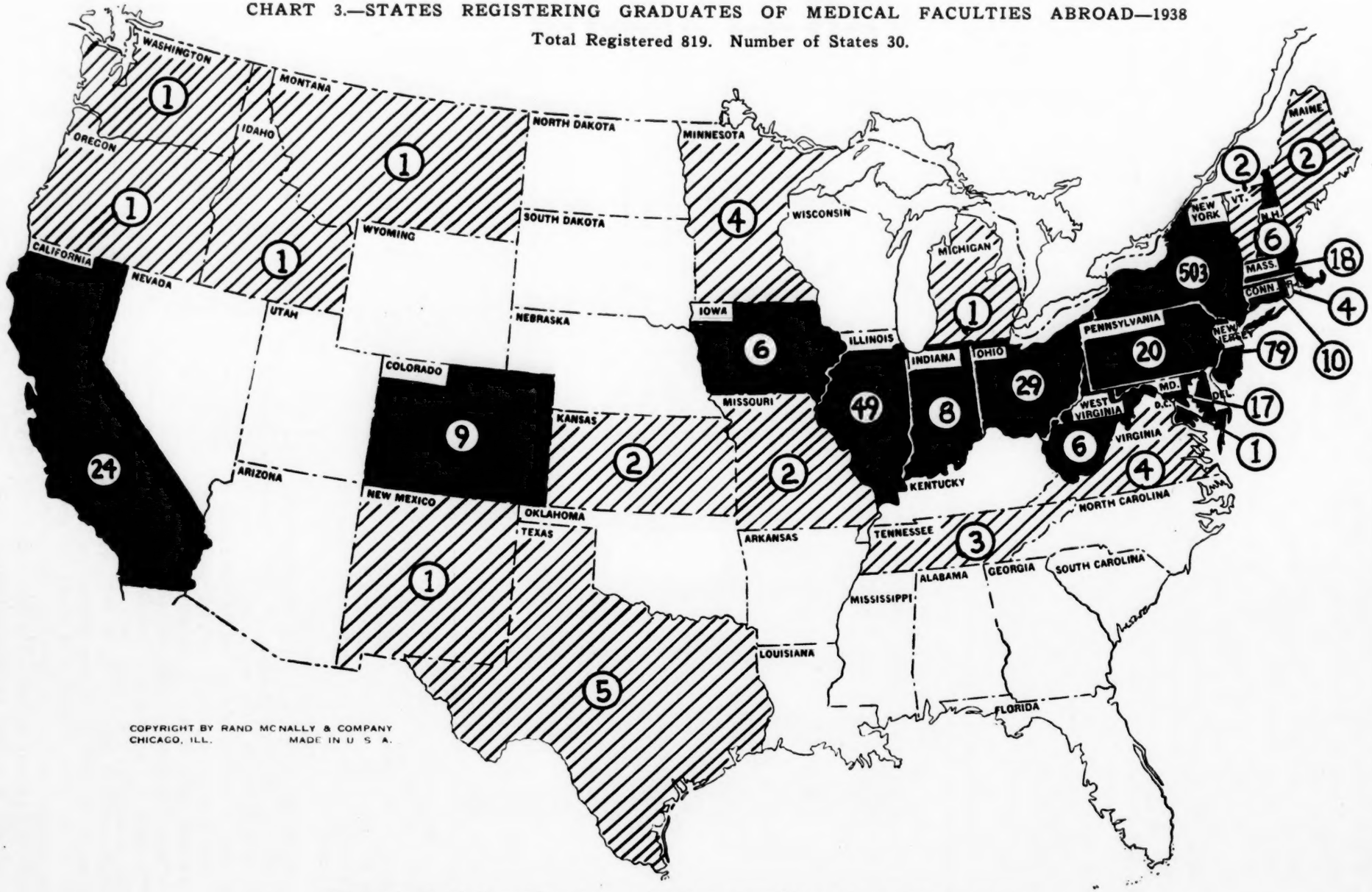
TABLE 17.—*Graduates of Unapproved Medical Schools Registered—1934-1938*

	Examination					Reciprocity and Endorsement					
	1934	1935	1936	1937	1938	1934	1935	1936	1937	1938	Total
Arizona	0	0	0	2	1	0	0	0	0	0	3
Arkansas	1	0	0	0	1	0	0	0	0	1	3
California	1	1	0	0	0	0	2	0	0	0	4
Florida	1	1	1	2	2	0	0	0	0	0	7
Idaho	0	0	0	0	0	1	0	0	0	0	1
Illinois	33	67	84	82	60	0	0	0	0	0	326
Indiana	0	1	0	0	0	0	0	0	0	3	4
Kansas	1	0	0	0	0	0	0	0	0	0	1
Kentucky	1	1	0	0	0	0	0	2	2	1	7
Massachusetts	54	26	77	96	58	0	0	0	0	0	311
Mississippi	1	0	0	0	0	1	0	0	0	0	2
Missouri	0	0	0	0	0	0	2	0	0	1	3
Nebraska	0	0	0	0	0	0	0	0	1	0	1
New Jersey	0	0	5	1	7	4	0	1	2	4	24
New Mexico	0	0	1	0	1	0	2	1	0	2	7
New York	0	0	0	0	0	0	0	13	14	8	35
North Carolina	0	0	1	2	0	0	0	0	0	0	3
North Dakota	0	0	0	0	0	0	1	0	0	0	1
Ohio	0	16	31	23	32	1	0	0	0	0	103
Oklahoma	0	1	0	0	0	0	0	0	0	0	1
Pennsylvania	0	0	0	1	4	0	0	0	0	0	5
Rhode Island	0	1	0	0	0	0	0	0	0	0	1
South Dakota	0	1	0	0	0	0	0	0	0	0	1
Texas	0	0	0	0	1	2	0	0	3	0	6
Virginia	0	0	0	1	0	0	0	0	0	0	1
Wisconsin	0	0	0	0	0	0	0	1	0	0	1
Alaska and Hawaii	1	0	1	1	0	0	0	1	0	0	4
Totals	94	116	201	211	167	9	7	19	22	20	866

There was a decrease of twelve in the number registered by examination in 1938 and a larger decrease in the number registered by reciprocity or endorsement. The graduating class of 1938 of medical schools in the United States was 183 fewer than that for 1937, which

CHART 3.—STATES REGISTERING GRADUATES OF MEDICAL FACULTIES ABROAD—1938

Total Registered 819. Number of States 30.



The states in black registered more than 5 such candidates, those shaded 5 or less.

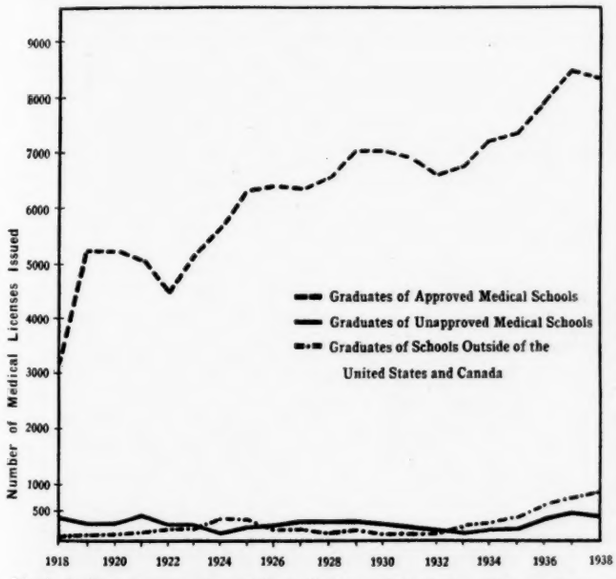
was 5,377 and may account for the decrease. It may also be due to the fact that several of the states are proceeding with more caution in the licensure of graduates of foreign credentials exacting additional requirements, such as an internship or further training in a medical school in the United States, in order to test their fitness for the practice of medicine in this country. It was also anticipated that the number of those registered to practice medicine and surgery would decrease,

TABLE 18—*Graduates of Schools of Osteopathy Registered by Medical Examining Boards—1934-1938*

	Examination					Reciprocity and Endorsement					
	1934	1935	1936	1937	1938	1934	1935	1936	1937	1938	Total
Colorado	10	13	16	19	18	0	0	0	0	0	76
Connecticut	1	0	1	1	0	0	0	0	0	0	3
Dist. of Columbia	0	0	0	0	1	1	0	0	0	0	2
Massachusetts	21	5	12	18	10	0	0	0	0	0	66
New Hampshire	0	0	1	4	2	0	0	0	2	1	10
New Jersey	0	2	0	52	46	0	0	0	0	0	100
Oregon	0	0	1	1	1	0	0	2	0	1	6
Texas	7	7	11	17	22	17	13	34	72	37	237
Virginia	2	4	4	2	1	0	1	0	0	0	14
Wisconsin	2	0	3	1	0	3	0	5	2	3	19
Wyoming	0	0	0	0	0	1	2	4	4	1	12
Totals	43	31	49	115	101	22	16	45	80	43	545

as there has been a reduction in medical school enrolments in recent years. In seventy-seven schools in the United States there were 22,888 students enrolled in 1935, 22,564 in 1936, 22,095 in 1937 and 21,587 in 1938. Classes in subsequent years in many cases will be further reduced.

The percentage of failures in 1938 was 11.7, the highest percentage since 1924, when 11.8 per cent failed. This increase is largely the result of the failure of many



Medical licensure in the United States, 1918-1938. The number of medical licenses issued includes duplicate registration.

of the graduates of unapproved schools and osteopaths granted medical privileges to pass the test on the first try. This is further outlined in subsequent tables.

SOURCE OF PHYSICIANS REGISTERED

The educational fitness of the individuals registered in seventeen years, 1922-1938, is shown in table 16. Of the 9,527 registered by all methods in 1938, 8,300, or 87.1 per cent, graduated from approved medical schools and there were 1,227, 12.9 per cent, other practitioners registered. In the computation of these figures, all schools rated as class A and B by the Council on Medical Education and Hospitals since 1907 are classified as approved. In the column "Others" are included graduates of institutions prior to 1907 of foreign faculties of medicine, class C graduates, undergraduates, osteopaths and graduates of schools that have been refused all recognition as medical schools.

Of the 9,527 graduates registered in 1938, 6,582 were registered after examination and 2,945 by endorsement. There were 5,446 graduates of approved medical schools in the United States, 148 graduates of approved Canadian medical schools registered and 988 others. Likewise among those registered by endorsement there were 2,668 graduates of approved medical schools in the United States and forty-six graduates of approved medical schools in Canada and 231 others.

LICENSURE OF PHYSICIANS 1918-1938

In graphic form are here presented data regarding the licensure of physicians in twenty-one years. Three significant curves are shown; namely, graduates of approved medical schools, graduates of unapproved medical schools and graduates of foreign medical faculties. The number of approved graduates in the period shown has always been in the bracket above 3,000, while in the other groups it has until recent years been below 500. The number of unapproved graduates is gradually decreasing, although the number licensed with foreign credentials is increasing.

GRADUATES OF UNAPPROVED MEDICAL SCHOOLS REGISTERED

In table 17 will be noted the total number of graduates of those institutions which do not meet the standards for approval outlined by the House of Delegates of the American Medical Association who were registered with or without examination from 1934 to 1938.

Fourteen states registered 187 such graduates in 1938, 167 by examination and twenty without examination. The number decreased by forty-six the number registered in 1937. One each was licensed in Arizona, Kentucky, Missouri and Texas. One undergraduate was licensed in 1938 in New Jersey.

In the five year period shown, 866 graduates of unapproved schools and undergraduates were registered, 789 by examination and seventy-seven by reciprocity.

Chart 1, on page 1712, indicates by shaded lines those registering fewer than six graduates of unapproved medical schools and by a solid area those registering more than five such candidates during 1938.

MEDICAL EXAMINING BOARDS REGISTERING OSTEOPATHS TO PRACTICE MEDICINE, SURGERY OR BOTH

In table 18 are given the number of graduates of schools of osteopathy registered with or without examination by medical examining boards from 1934 to 1938 inclusive.

In 1938 ten states registered such individuals, 101 by examination and forty-three by endorsement of credentials. These osteopaths were registered in Colorado, the District of Columbia, Massachusetts, New Hampshire, New Jersey, Oregon, Texas, Virginia, Wisconsin and Wyoming and were granted the right to practice medicine, surgery or both by the board of medical examiners. These facts for 1938 are shown graphically in chart 2, on page 1714.

In the five year period 1934-1938, 545 graduates of osteopathic schools were registered in eleven states.

In Colorado osteopaths are admitted to the examination for a license to practice medicine. They have no

(CONTINUED ON PAGE 1720)

TABLE 19.—*Physicians Examined on the Basis of Credentials Obtained in Countries Other Than the United States and Canada—1938*

| Marginal Number | | 1 California | | 2 Colorado | | 3 Connecticut | | 4 Idaho | | 5 Illinois | | 6 Indiana | | 7 Iowa | | 8 Kansas | | 9 Maine | | 10 Maryland | | 11 Massachusetts | | 12 Michigan | | 13 Minnesota | | 14 Missouri | | 15 New Hampshire | | 16 New Jersey | | 17 New York | | 18 Ohio | | 19 Oregon | | 20 Pennsylvania | | 21 Rhode Island | | 22 Tennessee | | 23 Texas | | 24 Virginia | | 25 Washington | | 26 West Virginia | | 27 Hawaii, Puerto Rico | | Totals | Examined—Passed | Examined—Failed | Percentage—Failed | No. of Boards Examined by | Marginal Number |
|---|---|---

| | | |

(CONTINUED FROM PAGE 1717)

separate board. The statute of Colorado is silent with respect to the scope of practice authorized by a license issued to osteopaths.

TABLE 20.—*Requirements of Candidates for Medical Licensure on the Basis of Credentials Obtained in Countries Other Than the United States and Canada*

	Admitted by Examination	Admitted by Endorsement of State License*	Citizenship	Basic Science Certificate	Internship	Further Medical Training	Examination Fee, Dollars	Other Requirements
Alabama	+	..	+	..	+	..	10	1
Arkansas (regular board)	Not accepted							
California	+	..	..	..	+[2]	+[2]	25	..
Colorado	+	..	1st P	+	..	..	25[4]	3
Connecticut (regular board)	+	..	1st P	+	..	..	25	..
Delaware (regular board)	+	+	+	..	+	..	25	5
District of Columbia	+	+[6]	..	+	+	..	25	..
Florida	+	..	+	..	..	+[7]	25	..
Georgia	+	..	+	..	..	+[7]	20	..
Idaho	+	..	+[8]	..	+	..	25	..
Illinois	+	..	..	..	+	..	10	..
Indiana	+	+	+[9]	..	..	+[7]	25	..
Iowa	+[10]	..	+	+	+[2]	+[2]	25	..
Kansas	+	..	+	..	+	..	25	11
Kentucky	..	+[12]	+	..	+	..	..	..
Louisiana	Not accepted							
Maine	+	..	1st P	..	+	..	25	11
Maryland (regular board)	+	..	1st P	..	..	..	25	11
Massachusetts	+	..	..	..	..	..	25	..
Michigan	+	+	+	..	+	+[7]	35	..
Minnesota	+	+	+	+	..	..	20	11
Mississippi	+	+	1st P	..	..	..	10	..
Missouri	+	+	+	..	+	..	15	..
Montana	+	+	+	..	..	..	50	..
Nebraska	+	+	+	+	..	..	25	..
Nevada	Not accepted							
New Hampshire	+	+	..	..	+	..	20	..
New Mexico	Not accepted							
New York	+	+	1st P	..	..	..	25	..
North Carolina	Not accepted							
North Dakota	+	..	..	..	+	..	..	11
Ohio	+[10]	+	1st P	..	+[13]	+[13]	25	11
Oklahoma	Not accepted							
Oregon	+	..	1st P	+	+[2]	+[2]	25	..
Pennsylvania	+	..	1st P	..	+	..	25	11
Rhode Island	+	..	1st P	..	+[14]	..	20	..
South Carolina	Not accepted							
South Dakota	+	+	1st P	+[15]	+	..	20	..
Tennessee	Not accepted							
Texas	+	+	+	..	..	..	25	..
Utah	..	+[12]	1st P	..	+	..	..	..
Vermont	+[16]	+	..	..	+	..	20	..
Virginia	+	..	1st P	..	..	..	25	..
Washington	+	..	1st P	+	+	+[7]	..	..
West Virginia	Not accepted							
Wisconsin	Not accepted							
Wyoming	Not accepted							

Compilation of data furnished by state examining boards. This information is not guaranteed as there may have been changes of which this office has not been advised. For an authentic statement write directly to the medical board.

* Refer to chart of "Reciprocity and Endorsement Policies" for further data.

Reports from Arizona and New Jersey were not received.

1. Certificate of National Board of Medical Examiners and licensure in country in which school of graduation is located.
2. Internship or one year in medical school in United States.
3. Certificate of National Board of Medical Examiners.
4. For graduates of last five years; if more than five years $50.
5. Residence of one year in Delaware.
6. Provided similar privileges are accorded licentiates of District of Columbia by licensing agency of the jurisdiction from which the applicant comes.
7. Senior year in Class A medical school in United States.
8. Effective in May 1939.
9. Reciprocity applicants only.
10. Application must be filed six months prior to date of examination.
11. Licensed to practice medicine and surgery in country in which school of graduation is located.
12. Diplomates of National Board of Medical Examiners eligible for licensure only.
13. At the discretion of the board.
14. Internship and one year graduate work.
15. After July 1, 1939.
16. Applicants from schools in England and Scotland only.

In most states all foreign credentials must be visaed by the American consul.

The Connecticut statute provides that any registered osteopath may practice either medicine, surgery or both, as the case may be, after passing a satisfactory examination before the medical examining board.

The Massachusetts statute, by definition, includes osteopathy in the practice of medicine and does not differentiate the type of license issued to an osteopathic applicant. The medical practice act requires that any applicant for license to practice must be in possession of a degree of doctor of medicine, or its equivalent, from a legally chartered medical school that gives a full four year course of instruction of not less than thirty-two weeks in each year.

In New Hampshire osteopaths are granted the right to practice medicine and surgery by the Board of Registration in Medicine.

Osteopaths who are duly registered and licensed to practice osteopathy in the state of New Jersey, who present three years of practice of surgery in a hospital approved by the Board of Medical Examiners, may be admitted to the examination to be licensed to practice medicine and surgery.

The statutes of Texas provide for the issuing of a license to practice medicine only. So far as the statutes indicate, the osteopaths are not restricted in their field of practice.

In the District of Columbia, Oregon, Virginia, Wisconsin and Wyoming, osteopaths are granted the right to practice surgery.

TABLE 21.—*Annual Registration*

Arkansas (Eclectic Board only)	Minnesota
California	Nebraska
Colorado	Nevada
Connecticut	New York
Florida	North Dakota
Georgia	Oregon
Idaho	Pennsylvania
Iowa	Texas
Kansas	Utah
Louisiana	Wyoming

Four states—Alabama, Delaware, Mississippi and North Carolina—require physicians to pay annually an occupational or commercial tax. The fee for this registration is generally $2.

ANNUAL REGISTRATION

Twenty states, as shown in table 21, require that all physicians licensed register annually, whether or not they reside in the state.

PHYSICIANS EXAMINED ON THE BASIS OF CREDENTIALS OBTAINED IN COUNTRIES OTHER THAN UNITED STATES AND CANADA

An inquiry into the number of citizens of the United States studying medicine in faculties of medicine abroad has been carried on by the Council on Medical Education and Hospitals since 1931, when it became evident that great numbers were going to Europe to pursue medical courses. During the academic year 1937-1938, 1,346 citizens of the United States were enrolled in faculties of medicine abroad and 318 completed the medical course and have it is presumed returned to the United States to practice medicine. Similar figures obtain for other years. This influx of graduates from foreign medical schools has been a problem of major importance in the last few years from the point of view of hospital training, licensure and subsequent adjustment in the field of medical practice and is being further complicated by the migration to this country of physicians from central Europe.

Data recently received from state boards of medical licensure pertaining to the requirements of candidates for medical licensure holding credentials from medical schools outside the United States and Canada are presented in table 20. Reports were received from forty-six states and the District of Columbia. Eleven states report that, because of the inability to evaluate foreign credentials, holders of such certificates are not eligible for licensure. Of the remaining thirty-five states, twenty-nine require either United States citizenship

TABLE 22.—*Physicians Examined on the Basis of Credentials Obtained in Countries Other Than the United States and Canada by Licensing Boards of the United States and Possessions, 1933-1938*

	1933-1937		1938	
	Number Examined	Percentage Failed	Number Examined	Percentage Failed
AUSTRALIA				
University of Adelaide	1	0.0	0	0.0
University of Sydney	1	0.0	0	0.0
AUSTRIA				
Karl-Franzens-Universität, Graz	21	38.1	5	40.0
Leopold-Franzens-Universität, Innsbruck	7	28.6	3	33.3
Universität Wien	200	27.5	128	28.1
BELGIUM				
Université Catholique de Louvain	4	50.0	0	0.0
Université de Liège	5	80.0	0	0.0
Université Libre de Bruxelles	2	0.0	1	0.0
Universiteit Gent	1	100.0	1	100.0
CHILE				
Universidad de Chile, Santiago	2	0.0	0	0.0
CHINA				
Pennsylvania Medical School, Shanghai	2	0.0	3	33.3
Woman's Christian Medical College, Shanghai	0	0.0	1	0.0
CHOSEN (KOREA)				
Severance Union Medical College, Keijo	2	100.0	0	0.0
CUBA				
Universidad de la Habana	16	43.8	1	0.0
CZECHOSLOVAKIA				
Deutsche Universität, Prag	18	38.9	12	33.3
Masarykova Universita, Brno	5	80.0	0	0.0
Universita Karlova, Praha	7	71.4	2	100.0
Univerzita Komenského, Bratislava	5	60.0	0	0.0
DOMINICAN REPUBLIC				
Universidad de Santo Domingo	1	0.0	0	0.0
ENGLAND				
Fellow of the Royal College of Physicians of London	1	0.0	0	0.0
Licentiate in Medicine, Surgery and Midwifery of the Apothecaries' Society of London	5	60.0	0	0.0
Licentiate of the Royal College of Physicians of London and Member of the Royal College of Physicians of London	2	50.0	0	0.0
Licentiate of the Royal College of Physicians of London and Member of the Royal College of Surgeons of England	57	8.8	9	0.0
University of Birmingham	3	0.0	0	0.0
University of Bristol	1	0.0	1	0.0
University of Cambridge	1	0.0	0	0.0
University of Durham, Newcastle-upon-Tyne	8	25.0	0	0.0
University of Liverpool	1	0.0	0	0.0
University of London	8	37.5	0	0.0
University of Oxford	1	0.0	0	0.0
University of Sheffield	6	16.7	3	0.0
ESTONIA				
Université de Tartu	1	0.0	1	100.0
FRANCE				
Université de Bordeaux	2	50.0	0	0.0
Université de Lyon	5	40.0	1	0.0
Université de Montpellier	5	40.0	1	0.0
Université de Nancy	0	0.0	1	100.0
Université de Paris	75	33.3	38	39.5
Université de Strasbourg	3	0.0	1	0.0
Université de Toulouse	5	20.0	1	0.0
GERMANY				
Albert-Ludwigs-Universität, Freiburg	42	38.1	21	28.6
Albertus-Universität, Königsberg	13	53.8	21	38.1
Christian-Albrechts-Universität, Kiel	3	0.0	4	50.0
Eberhard-Karls-Universität, Tübingen	9	44.4	9	44.4
Ernst-Moritz-Arndt Universität Griefswald	3	33.3	0	0.0
Friedrich-Alexanders-Universität, Erlangen	10	60.0	8	75.0
Friedrich-Wilhelms-Universität, Berlin	180	31.7	146	37.0
Georg August-Universität, Göttingen	1	0.0	11	36.4
Hamburgische Universität	47	19.1	11	27.3
Hessische Ludwigs-Universität, Giessen	6	0.0	5	60.0
Johann Wolfgang Goethe-Universität, Frankfurt-am-Main	39	30.8	28	39.3
Julius-Maximilians-Universität, Würzburg	32	40.6	25	48.0
Kaiser-Wilhelms-Universität, Strassburg	5	40.0	4	50.0
Ludwig-Maximilians-Universität, München	62	27.4	56	39.3
Medizinische Akademie Düsseldorf	9	33.3	5	60.0
Philipps-Universität, Marburg	1	0.0	3	66.7
Rheinische Friedrich-Wilhelms-Universität, Bonn	9	22.2	22	54.5
Schlesische-Friedrich-Wilhelms-Universität, Breslau	42	28.6	43	35.0
Thüringische Landesuniversitat, Jena	5	20.0	2	50.0
Universität Heidelberg	42	14.3	41	41.5
Universität Köln	21	33.3	11	45.5
Universität Leipzig	27	37.0	18	61.1
Universität Rostock	6	50.0	9	33.3
Vereinigten Friedrichs-Universität, Halle-Wittenberg	2	0.0	2	50.0
Westfälische Wilhelms-Universität, Münster	3	66.7	0	0.0
GREECE				
National University of Athens	11	72.7	5	100.0
GUATEMALA				
Universidad Nacional de Guatemala	2	50.0	0	0.0
HUNGARY				
Magyar Királyi Erzsébet Tudományegyetem, Pecs	6	50.0	3	33.3
Magyar Királyi Ferencz József Tudományegyetem, Szeged	4	25.0	3	66.7
Magyar Királyi Pázmány Petrus Tudományegyetem, Budapest	33	30.3	7	42.9
Magyar Királyi Tisza-István-Tudományegyetem, Debrecen	2	50.0	0	0.0
IRAN (PERSIA)				
Government Medical School, Teheran	1	100.0	0	0.0
IRELAND				
Licentiate of the Royal College of Physicians of Ireland and Licentiate of the Royal College of Surgeons in Ireland	3	0.0	1	100.0
National University of Ireland	6	16.7	2	50.0
University of Dublin	11	27.3	2	50.0
ITALY				
Regia Università di "Benito Mussolini" di Bari	1	0.0	0	0.0
Regia Università di Bologna	40	47.5	26	53.8
Regia Università di Catania	0	0.0	2	50.0
Regia Università di Firenze	6	66.7	6	16.7
Regia Università di Genova	10	80.0	2	100.0
Regia Università di Messina	2	100.0	2	100.0
Regia Università di Milano	5	40.0	2	100.0
Regia Università di Modena	7	85.7	4	50.0
Regia Università di Napoli	134	61.9	41	61.0
Regia Università di Padova	20	60.0	4	50.0
Regia Università di Palermo	24	62.5	3	33.3
Regia Università di Pavia	2	0.0	1	100.0
Regia Università di Perugia	4	25.0	0	0.0
Regia Università di Pisa	2	50.0	11	45.5
Regia Università di Roma	188	49.5	57	49.1
Regia Università di Siena	4	50.0	4	75.0
Regia Università di Torino	2	0.0	0	0.0
JAPAN				
Japan Medical College, Tokyo	1	100.0	1	100.0
LATVIA				
Latvijas Universitäte, Riga	0	0.0	1	100.0
LEBANON				
American University of Beirut	3	0.0	2	0.0
Université de St. Joseph, Beyrouth	3	66.7	0	0.0
MEXICO				
Escuela Libre de Homeopatia del Estado de Puebla	1	100.0	1	100.0
Escuela Médico Militar, México, D. F.	4	75.0	1	100.0
Instituto Literario y Científico, San Luis Potosi	1	100.0	0	0.0
Universidad Nacional, México, D. F.	13	46.2	0	0.0
NETHERLANDS				
Rijks-Universiteit te Leiden	3	0.0	0	0.0
Rijks-Universiteit te Utrecht	0	0.0	1	0.0
Universiteit van Amsterdam	1	0.0	0	0.0
NORWAY				
Kongelige Frederiks Universitet, Oslo	1	0.0	0	0.0
POLAND				
Uniwersytet Jana Kazimierza, Lwów	4	50.0	0	0.0
Uniwersytet Jozefa Pilsulskiégo, Warszawa	1	0.0	2	50.0
Uniwersytet Stefana Batorego, Wilno	1	0.0	0	0.0
PORTUGAL				
Universidade de Lisboa	4	75.0	0	0.0
RUMÄNIA				
Universitatea din Bucuresti	2	50.0	0	0.0
Universitatea Regele Ferdinand I-iu din Cluj	7	57.1	0	0.0
SCOTLAND				
Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow	1	0.0	0	0.0
Licentiate of the Royal College of Physicians of Edinburgh	1	0.0	0	0.0
Licentiate of the Royal College of Physicians of Edinburgh and Licentiate of the Royal College of Surgeons of Edinburgh	8	0.0	0	0.0
Licentiate of the Royal College of Physicians, of the Royal College of Surgeons, Edinburgh, and of the Royal Faculty of Physicians and Surgeons, Glasgow	125	21.6	61	19.7
School of Medicine of the Royal Colleges, Edinburgh	1	0.0	0	0.0
University of Aberdeen	14	14.3	0	0.0
University of Edinburgh	66	10.6	4	0.0
University of Glasgow	32	0.0	7	0.0
University of St. Andrews	96	12.5	4	25.0
SOUTH AFRICA, UNION OF				
University of Cape Town	1	0.0	0	0.0
SPAIN				
Universidad Central de España, Madrid	5	20.0	0	0.0
Universidad de Santiago	1	0.0	0	0.0
Universidad de Sevilla	1	0.0	0	0.0
SWITZERLAND				
Universität Basel	63	27.0	40	25.0
Universität Bern	127	35.4	58	32.8
Universität Zürich	66	27.3	28	35.7
Université de Genève	66	27.3	21	42.9
Université de Lausanne	46	32.6	25	32.0
TURKEY				
University of Istanbul	1	100.0	1	100.0
UNION OF SOCIALIST SOVIET REPUBLICS				
First Moscow Medical Institute	2	50.0	0	0.0
Kharkov Medical Institute	4	50.0	0	0.0
Kiev Medical Institute	3	66.7	1	100.0
Military Medical Academy, Leningrad	1	100.0	0	0.0
Psycho-Neurological Institute, Petrograd	1	100.0	0	0.0
Saratov Medical Institute	4	75.0	0	0.0
Second Leningrad Medical Institute	1	0.0	0	0.0
Tomsk Medical Institute	1	0.0	0	0.0
YUGOSLAVIA				
Beogradskog Universiteta	2	50.0	0	0.0
Zagrebaskog Universiteta	1	0.0	0	0.0

or first papers as a condition precedent to taking the state board examinations and fifteen of these states require full citizenship. In some states the requirement is made by rule of the medical board, in others the provision is by statute. In addition, other restrictions are imposed. Nine states require a certificate in the basic sciences. Twenty-two states require a one year internship in a United States hospital approved for intern training. In nine states there is a requirement of a senior year's work in an approved medical school in the United States. In three states the candidate must be in possession of the certificate of the National Board of Medical Examiners. Application for licensure must be on file six months prior to the date of examination in two states.

TABLE 23.—*Physicians Examined on the Basis of Credentials Obtained in Countries Other Than the United States and Canada, 1930-1938*

Year	Number Examined	Passed	Percentage Failed
1930	167	92	44.9
1931	158	91	42.4
1932	182	96	47.3
1933	200	129	35.5
1934	285	170	40.2
1935	437	303	30.7
1936	588	382	35.0
1937	920	637	30.8
1938	1,166	716	38.6
Totals	4,103	2,616	36.3

Many of the foreign graduates are seeking or are serving internships in approved hospitals. In 1937 there were 245 employed in 105 hospitals throughout nineteen states. In 1938, 149 approved hospitals in twenty-nine states reported a total of 312. The Council has adopted the following resolution in an effort to assist hospitals in solving the perplexing problems associated with the selection of graduates from foreign schools:

Resolved, That, when suitable graduates of class A schools in the United States and Canada are not available, hospitals approved for intern training may accept graduates of European universities who have passed parts I and II of the examinations of the National Board of Medical Examiners.

Table 19 presents statistics covering physicians examined on the basis of credentials obtained in countries other than the United States and Canada by licensing boards of the United States and by Hawaii and Puerto Rico in 1938. It is not known how many are citizens of the United States. The figures in the accompanying tabulations therefore represent both American and foreign born physicians educated abroad. Seventy-nine medical faculties, excluding seven licensing corporations, of eighteen European and five other countries were represented. There were 1,166 examined, of whom 716 passed and 450, 38.6 per cent, failed. Graduates of the University of Berlin (146) were examined in fourteen states, 37.0 per cent of whom failed. Twelve states examined students of the Universities of Vienna and Munich, and ten states graduates of the Universities of Heidelberg and Rome. All other schools were represented in less than ten states. Twenty-six states, Hawaii and Puerto Rico examined physicians educated abroad. The state of New York had the greatest number, 730, of whom 433 passed and 297, 40.7 per cent, failed. New Jersey examined 106, with sixty-six successful and forty unsuccessful results; 37.7 per cent failed. Illinois was third with fifty-five examined, forty-eight passed and seven, 12.7 per cent, failures.

In addition to the figures represented in this table, twenty-six graduates of foreign medical faculties were licensed in 1938 without examination by endorsement of their credentials. This is a considerable reduction over 1937. This is due in large part, as described in the text regarding reciprocity and endorsement candidates, to the decision of the New York Board of Regents, which state licenses the majority of such physicians, no longer to admit such applicants to licensure without examination.

Relative to the registration by the state of New York of graduates of the extramural schools in Great Britain, the New York State Education Department in January 1939 further directed that such registrations cease for all students hereafter admitted to these institutions and that the department no longer issue qualifying certificates to American students seeking admission to these schools. The department will continue to recognize, however, those already having received the qualifying certificate and already engaged in study in these schools. The schools referred to are the School of Medicine of the Royal Colleges, Edinburgh; Anderson College of Medicine, Glasgow; St. Mungo's College Medical School, Glasgow, and the Schools of Surgery, Royal College of Surgeons in Ireland, Dublin.

Chart 3, page 1716, shows in graphic form the states which during 1938 registered graduates of foreign medical faculties by examination, reciprocity and endorsement, or both. Included in the figures on the chart are those licenses granted by reciprocity and endorsement on the basis of a license obtained after examination from a medical board in this country. From a perusal of tables 2, 5 and 7 it can be ascertained how many were licensed by both these means in the various states. The states which licensed more than five graduates are indicated in black on the chart; those shaded, five or less. Fourteen states registered more than five, sixteen less than five. These thirty states altogether registered 819.

In table 22 are assembled figures showing the standing during the five year period 1933-1937 of the graduates of faculties of medicine outside the United States and Canada admitted to licensing examinations in this country. Included also is a tabulation for the year 1938. One hundred and twenty-nine foreign faculties and ten of the licensing corporations of Great Britain were represented. During the five year period, 2,430 were examined and, in 1938, 1,166. The largest number from any one school in the five year period was the University of Vienna, 200, of whom 27.5 per cent failed. The University of Rome in the five year period was second, 188, of whom 49.5 per cent failed. There were 180 from the University of Berlin with 31.7 per cent failures.

Table 23, the last in this group of statistics, records the number of graduates of faculties of medicine abroad examined in the United States in nine years, 1930 to 1938 inclusive. There were 246 more examined in 1938 than in 1937 and 999 more than in 1930. During the nine year period, 4,103 were examined, of whom 2,616 passed and 36.3 per cent failed.

The Council on Medical Education and Hospitals does not grade or classify medical schools outside the United States and Canada. No opportunity is afforded for visiting and inspecting such schools, nor are official reports received from them. The Council therefore has no evidence on which to base a rating. A list of foreign schools which has been published from time to time merely serves as a key to the American Medical Directory and indicates the names of the institutions which physicians now licensed to practice in the United States attended or from which they graduated.

EXAMINING BOARDS IN MEDICAL SPECIALTIES

The House of Delegates of the American Medical Association at its annual session in 1933 passed the following resolution:

Resolved, That the Council on Medical Education and Hospitals is hereby authorized to express its approval of such examining boards in medical specialities as conform to the standards of administration formulated by the Council; and be it further

Resolved, That the Board of Trustees of the American Medical Association be urged to use the machinery of the American Medical Association, including the publication of its directory, in furthering the work of such examining boards as may be accredited by the Council.

Standards were formulated by the Council and approved by the House of Delegates, June 11-15, 1934. Thirteen boards have to date been approved, and those certified at the time of the publication of the fifteenth edition of the American Medical Directory are identified in the directory by the key A.B. 1, 2, and so on. The key number of the boards, the year incorporated and the number of certificates awarded to date appear in the following tabulation. The number certified by some of the boards has been reduced by death. Recorded therefore are the active diplomates.

Certificates Awarded by Examining Boards in Medical Specialties

Key A.B.	Name of Board	Year	Certificates Awarded (Active Diplomates)
1.	American Board of Pediatrics	1933	1,335
2.	American Board of Psychiatry and Neurology	1934	617
3.	American Board of Orthopaedic Surgery	1934	578
4.	American Board of Dermatology and Syphilology	1932	415
5.	American Board of Radiology	1934	1,199
6.	American Board of Urology	1935	553
7.	American Board of Obstetrics and Gynecology	1930	792
8.	American Board of Internal Medicine	1935	1,703
9.	American Board of Pathology	1936	689
10.	American Board of Ophthalmology	1917	1,600
11.	American Board of Otolaryngology	1924	2,807
12.	American Board of Surgery	1937	1,039
13.	American Board of Anesthesiology	1937	47
	Total		13,374

To date 13,374 have been certified in thirteen specialties. Each of these boards has published a booklet containing a brief statement regarding its organization personnel, purposes and qualifications for eligibility for certification, which is available on request to the officers of these boards or to the American Medical Association.

BASIC SCIENCE BOARDS

Boards for the examination in the basic sciences of all those desiring ultimately the right to practice the healing art functioned in eleven states and the District of Columbia in 1938, namely Arizona, Arkansas, Colorado, Connecticut, Iowa, Minnesota, Nebraska, Oklahoma, Oregon, Washington and Wisconsin. Basic science requirements were established in Michigan in 1937 but do not apply to any person matriculated in any medical, osteopathic or chiropractic school or college on or before Oct. 15, 1937. South Dakota enacted a basic science law in 1939 but it does not apply to students regularly registered and enrolled as of March 15, 1939, in schools of medicine, osteopathy and chiropractic. The years in which the various acts were enacted are shown in table 1.

Statistics based on the number of candidates certified in 1938 and those who failed to secure this certification, together with the totals for other years shown for comparison, are included in the accompanying tabulations. Similar data have been published in the State Board Number of THE JOURNAL since 1928.

The subjects in which examinations are conducted in the respective states and the District of Columbia are given in table 2. The subjects included in basic science examinations are specified by the statutes. The examination boards may neither add to nor subtract from such subjects. While the laws of some of these states include reciprocal agreements, the certificate is obtainable after examination in the majority of instances.

TABLE 1.—*States Having Basic Science Laws and Year of Enactment*

Arizona	1933	Minnesota	1927
Arkansas	1929	Nebraska	1927
Colorado	1937	Oklahoma	1937
Connecticut	1925	Oregon	1913
District of Columbia	1929	South Dakota	1939
Iowa	1935	Washington	1927
Michigan	1937	Wisconsin	1925

Applicants examined during 1938 in the various groups—physicians, osteopaths, chiropractors or students, and those unclassified—are included in table 3. The twelve boards functioning examined 1,325 candidates. Of this number, 1,168 were doctors of medicine, eighty-one osteopaths and thirty-two chiropractors; for forty-four it was not possible to determine what profession they represented. In applying for a basic science certificate it is not necessary in several of the states to mention the school of practice, but by checking the biographic records of the American Medical Association it has been possible to determine what profession the majority of the candidates represented. The remainder compose the unclassified group. Of all examined, 1,095 passed and 230 failed, 17.4 per cent. Of the physicians examined 12.2 per cent failed, of the osteopaths 42 per cent, of the chiropractors 75 per cent and of those unclassified 68.2 per cent. There were 1,026 physicians who passed, forty-seven osteopaths, eight chiropractors and fourteen unclassified. Minnesota examined the largest number, 266, of whom 21.1 per cent failed. The next largest number, 198, were examined in Wisconsin, with 8.1 per cent failures. Osteopaths were examined in Arizona, Arkansas, Colorado, Connecticut, District of Columbia, Iowa, Minnesota, Nebraska, Oregon, Washington and Wisconsin: in fact, in every state except Oklahoma. Chiropractors were examined in Connecticut, Iowa, Minnesota,

TABLE 2.—*Subjects of Examinations*

	Examinations Required in							
	Anatomy	Bacteriology	Chemistry	Diagnosis	Hygiene	Pathology	Physiology	Hygiene and Public Health
Arizona	+	+	+	..	+	+	+	..
Arkansas	+	+	+	..	..	+	+	..
Colorado	+	+	+	..	..	+	+	..
Connecticut	+	..	..	+	+	+	+	..
Dist. Columbia	+	+	+	..	..	+	+	..
Iowa	+	+	+	..	+	+	+	..
Michigan	+	+	+	..	..	+	+	+
Minnesota	+	+	+	..	+	+	+	..
Nebraska	+	+	+	..	+	+	+	..
Oklahoma	+	+	+	..	..	+	+	..
Oregon	+	..	+	..	+	+	+	..
South Dakota	+	+	+	..	..	+	+	..
Washington	+	..	+	..	+	+	+	..
Wisconsin	+	..	..	+	..	+	+	..

Oregon, Washington and Wisconsin. The highest percentage of failures, 37.5, was in Iowa, which examined forty physicians, sixteen osteopaths, three chiropractors and thirteen unclassified candidates.

The number of certificates granted by examination, reciprocity and endorsement are recorded in table 4. A total of 1,095 certificates were granted after examination; 1,026 were issued to physicians, forty-seven to osteopaths, eight to chiropractors and fourteen to

TABLE 3.—*Applicants Examined—1938*

	Physicians		Osteopaths		Chiropractors		Unclassified		Total Examined	Passed	Failed	Percentage Failed
	P	F	P	F	P	F	P	F				
Arizona	41	0	4	0	0	0	0	13	58	45	13	22.4
Arkansas	65	3	5	0	0	0	2	0	75	72	3	4.0
Colorado	29	6	2	1	0	0	0	1	39	31	8	20.6
Connecticut	131	2	1	2	1	2	0	0	139	133	6	4.3
District of Columbia	23	7	1	1	0	0	0	0	32	24	8	25.0
Iowa	26	14	12	4	0	3	7	6	72	45	27	37.5
Minnesota	202	40	5	8	2	3	1	5	266	210	56	21.1
Nebraska	84	19	0	3	0	0	0	0	106	84	22	20.8
Oklahoma	68	10	0	0	0	0	0	0	78	68	10	12.8
Oregon	67	14	2	2	0	1	3	3	92	72	20	21.7
Washington	124	25	2	7	3	9	0	0	170	129	41	24.1
Wisconsin	166	2	13	6	2	6	1	2	198	182	16	8.1
Totals—Examined	1,168		81		32		44		1,325			
Totals—Passed	1,026		47		8		14		.....	1,095		
Totals—Failed	142		34		24		30		.....	.....	230	
Percentage failed	12.2		42.0		75.0		68.2		.....	.....	...	17.4

persons who were unclassified. In addition there were 293 candidates certified without examination, by reciprocity or endorsement, consisting of 267 physicians, twenty-four osteopaths and two listed as unclassified. Iowa accepted the greatest number without examination, seventy, of whom sixty-nine were physicians and one was an osteopath. Minnesota registered sixty-three physicians and five osteopaths by this method. Wisconsin certified forty-two physicians, seven osteopaths and one unclassified, and Arkansas thirty-seven

TABLE 4.—*Certificates Issued by Examination, Reciprocity and Endorsement—1938*

	Examination					Reciprocity and Endorsement					
	Physicians	Osteopaths	Chiropractors	Unclassified	Totals	Physicians	Osteopaths	Chiropractors	Unclassified	Totals	Registered
Arizona	41	4	0	0	45	0	0	0	0	0	45
Arkansas	65	5	0	2	72	37	6	0	0	43	115
Colorado	29	2	0	0	31	15	2	0	0	17	48
Connecticut	131	1	1	0	133	0	0	0	0	0	133
District of Columbia	23	1	0	0	24	22	0	0	0	22	46
Iowa	26	12	0	7	45	69	1	0	0	70	115
Minnesota	202	5	2	1	210	63	5	0	0	68	278
Nebraska	84	0	0	0	84	8	1	0	0	9	93
Oklahoma	68	0	0	0	68	0	0	0	1	1	69
Oregon	67	2	0	3	72	11	2	0	0	13	85
Washington	124	2	3	0	129	0	0	0	0	0	129
Wisconsin	166	13	2	1	182	42	7	0	1	50	232
Totals	1,026	47	8	14	1,095	267	24	0	2	293	1,388

physicians and six osteopaths. Arizona, Connecticut and Washington licensed none without examination. Arizona, and Washington, by law, have no reciprocal agreements. No chiropractors were licensed without examination but two in the unclassified group were certified by this method.

The number of candidates examined, or certified by reciprocity or endorsement, from 1927 to 1938 inclusive will be found in table 5. In 1928, when five boards were functioning, there were 646 physicians examined, of whom sixty, or 9.3 per cent, failed and fifty-nine other practitioners, of whom twenty-eight, or 47.5 per cent, failed. In 1938, 1,293 physicians and ninety-five other practitioners were certified. During the twelve year period a total of 9,370 physicians were examined, of whom 1,122, 12.0 per cent, failed and 931 other practitioners, of whom 507, 54.5 per cent, failed. During this period 1,532 physicians were certified without examination, while only ninety-one other practitioners were so registered.

Altogether, 10,295 certificates have been issued by basic science boards since 1927, of whom 9,780 were granted to physicians and 515 to other practitioners. From the high percentage of failures in the other practitioner group it seems apparent that the enforcement

TABLE 5.—*Total Candidates—1927-1938*

		Physicians						Other Practitioners					
		Examinations						Examinations					
	Number of Boards	Examined	Passed	Failed	Percentage Failed	Endorsement	Total Certified	Examined	Passed	Failed	Percentage Failed	Endorsement	Total Certified
1927	5	305	279	26	8.5	26	305	22	15	7	31.8	1	16
1928	5	646	586	60	9.3	19	605	59	31	28	47.5	0	31
1929	7	668	610	58	8.7	75	685	66	31	35	53.0	0	31
1930	7	685	606	79	11.5	118	724	78	30	48	61.5	4	34
1931	7	680	586	94	13.8	141	727	107	48	59	55.1	0	48
1932	7	657	590	67	10.2	106	696	78	44	34	43.6	12	56
1933	8	601	527	74	12.3	121	648	60	30	30	50.0	10	40
1934	9	815	725	90	11.0	127	852	51	26	25	49.0	11	37
1935	10	882	761	121	13.7	110	871	74	33	41	55.4	4	37
1936	10	1,032	891	141	13.7	230	1,121	66	26	40	60.6	13	39
1937	12	1,231	1,061	170	13.8	192	1,253	113	41	72	63.7	10	51
1938	12	1,168	1,026	142	12.2	267	1,293	157	69	88	56.1	26	95
Total	....	9,370	8,248	1,122	12.0	1,532	9,780	931	424	507	54.5	91	515

of basic science laws affects most seriously this group. The object of these boards has been to provide a means of insuring that all candidates seeking authority to care for sick and injured people shall first possess a reasonable knowledge of the sciences fundamental to the healing art. Basic science bills are being advocated in several states and bills are pending in the legislature.

NATIONAL BOARD OF MEDICAL EXAMINERS

The National Board of Medical Examiners was organized in 1915 and chartered March 17, 1922, under the laws of the District of Columbia. Its purpose was to establish in this country a qualifying examination of such character that successful candidates could be admitted to the practice of medicine by state boards of medical licensure. Its constitution provides for a membership of thirty. This includes six members representing the federal services, five members nominated by the Federation of State Medical Boards of the United States, three members nominated by the Association of American Medical Colleges, two members nominated by the Council on Medical Education and Hospitals of the American Medical Association, and fourteen members elected at large.

Statistics are herewith presented regarding the examinations of and the issuance of certificates by the National Board of Medical Examiners. Similar material has been presented in the State Board Number of THE JOURNAL for twenty-one years.

Up to Dec. 31, 1921, eleven examinations were held as shown in table 1.

Since 1922 the examination has been given in three parts, parts I and II being written examinations and part III a practical and clinical examination. The data included in the following paragraphs refer to the examination and the issuance of certificates to this group and include tables enumerating the results of examinations in parts I, II and III for each calendar year, excluding duplications by counting the last examination if more than one part is taken within the year, and also of those certified or failing of certification.

TABLE 1.—*Examinations—1916-1921*

Date of Examination	Total Examined	Passed	Failed	Percentage Failed
October 1916	10	5	5	50.0
June 1917	12	9	3	33.3
October 1917	28	22	6	21.5
January 1918	20	18	2	10.0
April 1918	23	18	5	26.1
December 1918	16	15	1	6.3
June 1919	52	51	1	1.9
February 1920	48	36	12	25.0
May 1920	60	46	14	23.3
February 1921	16	11	5	31.3
June 1921	40	37	3	7.5
Totals	325	268	57	14.3

Candidates are required to take all six subjects of part I at a regular examination period unless entitled to take an incomplete examination or electing to take a divided examination. An incomplete examination is arranged for candidates taking part I at the end of their second medical year in schools in which the third year curriculums include courses in one or two subjects of this part. The subjects thus postponed may be taken at any examination period after the candidate has completed them in his medical school. Any candidate not entitled to take an incomplete examination in part I may, if he so elects, take a divided examination by writing any four subjects at one time and the remaining two within thirteen months, but after at least one semester of study. Incomplete examinations were not included when percentages were being computed, since they represent neither a candidate eligible for certification nor a failure.

TABLE 2.—*Examinations in Part I in 1938 and 1922-1938*

Date	Total Examinations	Passed	Incomplete	Failed	Percentage Failed
February	163	101	34	28	21.7
May	16	15	0	1	6.3
June	965	650	239	76	10.5
September	509	219	235	55	20.1
Totals	1,653	985	508	160	14.0
1922	388	263	58	67	20.3
1923	507	349	77	81	18.8
1924	591	415	69	107	20.5
1925	608	400	50	158	28.3
1926	625	436	104	85	16.3
1927	702	452	159	91	16.8
1928	843	533	231	79	12.9
1929	1,096	675	331	90	11.8
1930	1,260	801	345	114	12.5
1931	1,277	755	425	97	11.4
1932	1,307	847	371	89	9.5
1933	1,234	782	316	136	14.8
1934	1,241	809	347	85	9.5
1935	1,264	785	410	69	8.1
1936	1,344	858	363	123	12.5
1937	1,435	871	415	149	14.6
1938	1,653	985	508	160	14.0
Totals	17,375	11,016	4,579	1,780	13.9

A candidate who fails to make an average of 75 per cent but has received grades of at least 75 per cent in three or more main divisions is required to repeat those divisions, either in whole or in part, in which he received grades below 75 per cent. Grades below 60 per cent in any of the subdivisions are not acceptable if the grade for the corresponding main division is under 75 per cent. In such cases the candidate is "referred" in this subdivision and required after a three months interval to pass a reexamination. The privilege of a second reexamination is determined in each case by the board. "Referred" candidates are likewise excluded from the statistics.

Four examinations in part I were held in 1938, as indicated in table 2. Altogether 1,653 examinations were given, 985 passed, 508 were given incomplete examinations and 160, or 14.0 per cent, failed.

TABLE 3.—*Examinations in Part II in 1938 and 1922-1938*

Date	Total Examinations	Passed	Incomplete	Failed	Percentage Failed
February	169	161	0	8	4.7
May	378	358	0	20	5.3
June	245	231	0	14	5.7
September	69	65	0	4	5.8
Totals	861	815	0	46	5.3
1922	109	90	0	19	17.4
1923	192	170	2	20	10.5
1924	267	227	0	40	15.0
1925	342	309	0	33	9.6
1926	381	334	1	46	12.1
1927	361	314	1	46	12.8
1928	410	371	1	38	9.3
1929	465	390	19	47	10.5
1930	620	543	7	70	11.4
1931	719	630	2	87	12.1
1932	732	674	0	58	7.9
1933	714	651	0	63	8.8
1934	633	583	0	50	7.9
1935	689	620	0	69	10.0
1936	768	716	2	50	6.5
1937	855	803	1	51	6.0
1938	861	815	0	46	5.3
Totals	9,118	8,249	36	833	9.2

Four examinations were also given in part II, figures for which appear in table 3. During 1938, 861 were so examined, of whom 815 passed and forty-six, 5.3 per cent, failed.

Since 1922 a total of 17,375 examinations have been given in part I and 9,118 in part II. From 1922 to 1938 inclusive, 11,016 individuals were successful in passing part I and 8,249 in passing part II. The figures cover the totals of each examination given during a calendar year and include some who fail and are reexamined during the same year and also some who pass parts I and II in the same year. Therefore they represent examinations conducted rather than individuals examined. In the seventeen year period since 1922 there have been 1,780 failures in part I, 13.9 per cent, and 833 in part II, 9.2 per cent.

TABLE 4.—*Examinations in Part III—1922-1938*

	Total Examinations*	Passed	Failed	Percentage Failed
1922	22	22	0	0.0
1923	82	81	1	1.2
1924	126	120	6	4.8
1925	219	206	13	5.9
1926	255	243	12	4.7
1927	293	272	21	7.2
1928	322	306	16	5.0
1929	352	337	15	4.3
1930	420	401	19	4.5
1931	437	419	18	4.1
1932	550	522	28	5.1
1933	551	526	25	4.5
1934	567	548	19	3.4
1935	598	578	20	3.3
1936	576	547	29	5.0
1937	668	630	38	5.7
1938	706	682	24	3.4
Totals	6,744	6,440	304	4.5

Between 1916 and 1921 a total of 325 were examined, of whom 268 passed and 57, 14.3 per cent, failed. Total certificates awarded, 6,708.
* Excluding "referred" examinations.

The results of examinations in part III for the seventeen year period 1922 to 1938 inclusive are represented in table 4. In 1938, 706 were examined, as compared with only twenty-two in 1922. Of the number examined in 1938, twenty-four, or 3.4 per cent, failed. The highest percentage of failures was in 1927, when 293 were examined and twenty-one, 7.2 per cent, failed. In seventeen years 6,744 were examined, of whom 6,440 were granted certificates and 304, 4.5 per cent, failed. Here again a candidate having failed may subsequently receive a certificate.

From 1916 to 1921, when the examination was not given in three parts, 325 were examined, of whom 268 passed and fifty-seven, 14.3 per cent, failed.

Altogether from 1916 up to and including 1938, 6,708 certificates have been granted.

The number of persons examined during any one year is given in table 5. The classification as passed or failed, in cases in which more than one examination has been taken in a given year, was based on the results of the last examination during the year in question. For example, if in 1938 a candidate passed part I but later failed part II, he is listed as having failed. Taking this into consideration, there were 2,990 who took at least one of the examinations of the National Board of Medical Examiners during 1938, as compared with 525 in 1922. A total of 30,759 were examined in one or more of the examinations in the seventeen years shown, of whom 23,817 passed, 2,561 failed, 4,381 took incomplete examinations and 9.7 per cent failed.

TABLE 5.—*Parts I, II and III, Excluding Duplications—1922-1938*

	Total Examined*	Passed	Incomplete	Failed	Percentage Failed
1922	525	381	58	86	18.4
1923	775	594	79	102	14.7
1924	978	756	69	153	16.8
1925	1,167	915	50	202	18.1
1926	1,161	930	105	126	11.9
1927	1,248	947	142	159	14.4
1928	1,430	1,101	211	118	9.7
1929	1,723	1,280	319	124	8.8
1930	2,044	1,547	322	175	10.2
1931	2,218	1,632	410	176	9.7
1932	2,342	1,850	355	137	6.9
1933	2,277	1,806	280	191	9.6
1934	2,261	1,801	330	130	6.7
1935	2,368	1,831	408	129	6.6
1936	2,517	1,989	353	175	8.1
1937	2,735	2,151	397	187	8.0
1938	2,990	2,306	493	191	7.7
Totals	30,759	23,817	4,381	2,561	9.7

* Excluding "referred" examinations.

Examinations in part III were held during 1938, at which 682 were successful. Graduates of fifty-nine approved schools in the United States and four in Canada were examined. Thirteen graduates of medical faculties abroad were also certified. Table 6 records the number of diplomates from each school certified in 1938 in part III. At the College of Medical Evangelists students are required to pass parts I and II as a prerequisite to receiving their diploma. The comprehensive qualifying examination, or part I of the examination of the National Board, is required of all medical students entering Yale University School of Medicine in the fall of 1937. Students at Georgetown University School of Medicine are urged to take the examinations of the National Board. Students admitted to Boston University School of Medicine subsequent to 1937 are required to pass part I in order to supplement the qualifications for promotion to the third year class. All students before entering the senior class at the New York Medical College must have taken part I of the examination of the National Board. While the certificate is not required by these schools, their graduates and, in addition, those of Harvard, Tufts and Duke University represented the majority of those certified.

Diplomates licensed on the basis of their credentials have increased from two in 1917 to 673 in 1938, 4,793 having been so licensed since the National Board was formed. However, 6,708 have received the certificate of the board. In 1938 diplomates were registered on the basis of credentials in thirty-eight states, the District of Columbia, Alaska, Hawaii and Puerto Rico.

TABLE 6.—*Diplomates from Individual Medical Schools—1938*

	Certificates Awarded		Certificates Awarded
Univ. of Arkansas	1	Albany Med. Coll.	10
Coll. of Med. Evan.	85	Columbia Univ.	7
Stanford Univ.	7	Cornell Univ.	19
Univ. of California	3	Long Island Coll. of Med.	8
Univ. of Southern Calif.	1	N. Y. Med. Coll.	55
Univ. of Colorado	9	New York Univ.	13
Yale Univ.	41	Syracuse Univ.	4
George Washington Univ.	11	Univ. of Buffalo	3
Georgetown Univ.	49	Univ. of Rochester	1
Howard Univ.	2	Duke Univ.	38
Emory Univ.	2	Univ. of Cincinnati	1
Univ. of Georgia	3	Western Reserve Univ.	1
Loyola Univ.	3	Univ. of Oklahoma	4
Northwestern Univ.	15	Univ. of Oregon	1
Rush Med. Coll.	12	Hahnemann, Phila.	1
Div. of Biological Sc., U. Chicago	7	Jefferson Med. Coll.	7
Univ. of Illinois	2	Temple Univ.	2
State Univ. of Iowa	4	Univ. of Pennsylvania	5
Univ. of Kansas	2	Woman's Med., Pa.	4
Univ. of Louisville	3	Med. Coll. of S. C.	2
Tulane Univ.	5	Meharry Med. Coll.	1
Johns Hopkins Univ.	10	Univ. of Tennessee	1
Boston Univ.	34	Baylor Univ.	1
Harvard Univ.	52	Univ. of Vermont	15
Tufts Coll. Med. Sch.	42	Med. Coll. of Virginia	3
Univ. of Michigan	7	Marquette Univ.	8
Wayne Univ.	2	Univ. of Wisconsin	1
Univ. of Minnesota	9	Dalhousie Univ.	2
St. Louis Univ.	5	McGill Univ.	10
Washington Univ.	6	Univ. of Manitoba	2
Creighton Univ.	1	Univ. of Toronto	1
Univ. of Nebraska	3	Foreign	13
		Total	682

The certificate of the National Board of Medical Examiners is granted recognition by the licensing boards of forty-four states and Alaska, Canal Zone, Hawaii and Puerto Rico (table 7).

TABLE 7.—*States Endorsing Certificates of National Board of Medical Examiners*

Alabama	Illinois	Montana	Pennsylvania
Alaska	Indiana	Nebraska	Puerto Rico
Arizona	Iowa	Nevada	Rhode Island
Arkansas	Kansas	New Hampshire	South Carolina
California	Kentucky	New Jersey	South Dakota
Canal Zone	Maine	New Mexico	Tennessee
Colorado	Maryland	New York	Utah
Connecticut	Massachusetts	North Carolina	Vermont
Delaware	Michigan	North Dakota	Virginia
Dist. of Columbia	Minnesota	Ohio	Washington
Georgia	Mississippi	Oklahoma	West Virginia
Hawaii	Missouri	Oregon	Wyoming

Some of these boards have additional requirements.

Diplomates of the National Board of Medical Examiners are admitted to the final examination given by the Conjoint Examining Board of England and Ireland and the Triple Qualification Board of Scotland. The certificate is accepted by the United States Army for admission to its Medical Corps and also by the United States Public Health Service and is recognized also in Lebanon, South Africa, Spain and Turkey.

Examinations in parts I and II are held at class A medical schools where there are five or more candidates desiring to be examined, and part III is held in twenty-two established centers throughout the United States.

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SATURDAY, APRIL 29, 1939

OBITUARIES OF PHYSICIANS PUBLISHED IN 1938

The number of obituaries of physicians published in THE JOURNAL during 1938 was 3,768, including 3,630 of the United States as compared with 3,277 in 1937, also 138 of Canadian physicians. Four died in the Philippine Islands, 3 each in Mexico and Puerto Rico, 2 each in Cuba and France, and 1 each in Africa, the Canal Zone, England, India and Korea. The obituaries of 108 women physicians were published, as compared with 113 in 1937. The number of graduates of medical schools in the United States for the fiscal year ended June 30, 1938, was 5,194. Deducting the number of physicians whose obituaries were published, there was a net addition to the profession for the year of 1,564, not including physicians coming to the United States from abroad.

Ages.—The average age at death of those classified as of the United States was 65.6, as compared with 65.4 in 1937. Thirty-two physicians died between the ages of 25 and 29, fifty-two between 30 and 34, seventy-three between 35 and 39, eighty-one between 40 and 44, 158 between 45 and 49, 250 between 50 and 54, 403 between 55 and 59, 524 between 60 and 64, 590 between 65 and 69, 535 between 70 and 74, 421 between 75 and 79, 312 between 80 and 84, 144 between 85 and 89, forty-three for 90 and eight for 95 and over. In four cases the age was not determined.

Causes of Death.—Heart disease was again the leading cause of death, as it has been for many years. Some contributory causes are also included in THE JOURNAL'S tabulation as they have been in former years. For example, when a report of the cause of death gave chronic nephritis and heart disease, it was published as such in THE JOURNAL and was reported on the statistical charts under both diseases. Thus heart disease was reported as a cause of death in 1,491 cases. Endocarditis or myocarditis was specified in 396 cases, coronary thrombosis in 337, coronary occlusion in 167 and angina pectoris in 84. Other diseases of the heart caused 507 deaths. Arteriosclerosis was the second most frequent cause, with 442. Cerebral hemorrhage was the third most frequent cause with 384 deaths; 28 additional deaths were reported as due to paralysis. Fourth on the list was pneumonia with 350 deaths, of which 111 were specified as bronchopneumonia. Of 334 deaths reported as due to cancer, the stomach and liver were reported affected in 66 cases, the prostate gland in 51, the intestine in 42, the female genital organs in 5; in 180 cases the part affected was not specified. Nephritis was reported as the cause of 204 deaths. The number of cases in which hypertension was reported was 125, embolism and thrombosis exclusive of coronary thrombosis 124, uremia 99, other diseases of the urinary system 73, diabetes 77, tuberculosis 70, other diseases of the respiratory system 5, diseases of the prostate other than cancer 54, cirrhosis of the liver 44, other diseases of the liver 11, senility 33, ulcer of the stomach and duodenum 29, other diseases of the digestive system 22, septicemia 28, peritonitis 24, influenza 23, leukemia and intestinal obstruction 22 each, appendicitis 18, pernicious anemia 17, cholecystitis 16, encephalitis and paralysis agitans 15 each, arthritis 14, biliary calculi and chronic bronchitis 13 each, hemorrhage 12, meningitis and gangrene 11 each, brain tumor 10, other tumors 4, hernia 9, abscesses 8, Hodgkin's disease, aplastic anemia and aneurysm 7 each, asthma 6, diseases of the veins and typhoid 5 each, cerebral sclerosis, empyema, osteomyelitis, shock and streptococcic infection 4 each, carbuncle, diverticulitis, malaria, obstructive jaundice, pleurisy and streptococcic infection of the throat 3 each, Addison's disease, Adams-Stokes syndrome, amyotrophic lateral sclerosis, bacillary dysentery, cerebral softening, diverticulosis, esophageal varix, granulocytopenia, dementia paralytica, heat prostration, multiple sclerosis, myelitis, sinusitis, pyloric stenosis, ruptured gallbladder, tonsillitis, undulant fever and secondary anemia 2 each. Other diseases causing one death each as reported were abscessed teeth, actinomycosis, alcoholism, amebic dysentery, asphyxiation caused by deformity of the spine, calcification of the pineal gland, cellulitis, cerebral anemia, diphtheria, disease of the adrenal glands, duodenal perforation, erysipelas, food poisoning, furunculosis, gas bacillus infection, ileitis, laryngospasm, Ludwig's angina, lymphoma, mastoiditis, mediastinitis, multiple myeloma, multiple neuritis, occlusion of the popliteal artery, otitis media, paraldehyde poisoning, paralytic ileus, parotitis, pellagra, persistent thymus, pulmonary fibrosis, purpura haemorrhagica, respiratory failure, rupture of the aorta, rupture of the heart, spinal sclerosis, splenitis, sponta-

neous pneumothorax, subarachnoid hemorrhage, teratoma, tetanus, thyroid disease, toxic purpura, tularemia, varicose ulcer and vesical calculi.

Accidental Deaths.—One hundred and fifty-five physicians died as the result of accidents in 1938, compared with 151 in the previous year. Automobile accidents accounted for 81 deaths, falls 30, drowning 9, burns 7, airplane accidents 4, carbon monoxide gas 3, illuminating gas 2, shooting 2, explosions, overdose of medicine, poison, street car and train accidents 1 each. In 8 cases unexplained fractures were given as causes of death. One physician died of injuries received when he was struck by a motorcycle, one of an accidental wound from a hypodermic needle and one from the bite of an insect.

Suicides and Homicides.—Suicide was the cause of eighty-one deaths of physicians in 1938. Bullet wounds accounted for 31 of these deaths, carbon monoxide poisoning 9, overdoses of medicine 7, jumping 6, incised wounds 6, gas and hanging 5 each, poison 4, stabbing 2, burns 1. One physician jumped in front of a train. In five cases the method was not reported; in addition four deaths from the following causes could not be classified because of insufficient information: falls from window 2, carbon monoxide poisoning 1, shooting 1. There were six homicides.

Civil Positions.—Among the decedents were 206 physicians who were or had been teachers in medical schools, 466 who had served in the World War, 13 veterans of the Civil War and 70 veterans of the Spanish-American War. One hundred and eighty-one were or had been health officers, 151 members of boards of education, 72 members of boards of health and 21 members of state boards of medical examiners. There were 75 who were or had been coroners, 51 mayors, 39 members of state legislatures, 32 authors, 26 bank presidents, 15 pharmacists, 15 members of city councils, 12 editors, 10 postmasters, 10 police surgeons, 8 dentists, 7 missionaries, 5 clergymen, 4 lawyers, 2 justices of the peace, 1 United States Senator, 1 Congressman and 1 judge. There were 21 members of the United States Army Medical Corps, 12 of the United States Navy Medical Corps, 13 of the United States Public Health Service, 13 of the Veterans' Administration and 5 of the Indian Medical Service.

Association Officers.—Among those who died who were or had been officers of the American Medical Association were 2 vice presidents and 6 section officers. Twenty members or former members of the House of Delegates died during the year. There were also 25 presidents or former presidents of state medical associations and 2 secretaries.

MEDICAL EDUCATION IN THE UNITED STATES AND ABROAD

Elsewhere in this issue are presented the figures reported by the medical examining boards of the United States. Since, for a variety of reasons, an unusually large number of applicants have come from other countries, an opportunity is afforded to compare the success before examining boards of those whose professional education has been received in approved schools in the United States with corresponding figures for those educated abroad. Reports to the Council do not distinguish between citizens of this country who, having gone elsewhere to study medicine, return here to practice, and natives of other countries who apply here for a medical license.

As a comparatively small number of physicians from some countries have taken the licensing examinations, only those countries are included from which more than twenty-five candidates were examined during 1938.

Since the number of failures among graduates of approved schools was only **3.0** per cent, it is obvious that candidates admitted to state board examinations on the basis of foreign credentials are not as well prepared for the licensing test as those who have been educated in our own schools. It may be objected that the poor record of graduates of foreign schools is due to the fact that they have not yet mastered the English language. This explanation, however, can account only partially for the discrepancy, since many of those educated abroad were born and raised in this country.

Failures of Candidates from Abroad

	Number Examined	Percentage of Failures
Austria	136	28.7
France	43	37.2
Germany	505	41.0
Italy	165	53.9
Scotland	76	17.1
Switzerland	172	32.6
	1,097	38.3

WHAT IS OSTEOPATHY?

Is it medicine or is it not? Do schools of osteopathy teach medicine or do they not? Last year 144 applicants whose training had been received in osteopathic schools were licensed by the boards of medical examiners in ten states to practice medicine, surgery or both; 101 were licensed after examination and forty-three without examination. The numbers licensed in each of these ten states are shown in chart 2, on page 1714.

In a number of states bills have been introduced which, if passed, would give to graduates of osteopathic schools the same privileges and responsibilities that are given to graduates of approved medical schools. Is such legislation compatible with public safety or in the interest of public welfare? Proponents of these measures claim that medicine is taught as completely and as thoroughly in schools of osteopathy as in schools of medicine.

Osteopathic schools have consistently refused to permit an inspection by the Council on Medical Education and Hospitals of the American Medical Association. Recently, however, a committee of the Kansas legislature visited one of these schools and found conditions which a recognized medical school would not tolerate. In the medical sciences, anatomy, biochemistry, physiology, bacteriology and pathology the faculty was utterly inadequate both in numbers and in scientific training. For teaching the various clinical branches of medicine the number of hospital patients available was about one twenty-fifth of the number to which students at the University of Kansas have access. This school of osteopathy, at least, does not even remotely approach the generally accepted standards of education for the practice of medicine.

Current Comment

PHENYLPYRUVICA OLIGOPHRENIA

A mental condition known as phenylpyruvica oligophrenia, or imbecillitas phenylpyruvica, has recently been described by investigators in Norway,[1] England[2] and the United States.[3] Mentally defective patients suffering from phenylpyruvica oligophrenia characteristically excrete phenylpyruvic acid in the urine, being apparently unable to oxidize and decarboxylate phenylpyruvic acid in a normal manner. The formation of phenylpyruvic acid in the body is thought to result from the oxidative deamination of the essential amino acid phenylalanine. When phenylalanine is fed to persons with this metabolic abnormality, the excretion of phenylpyruvic acid in the urine is increased. The disease is therefore characterized biochemically by the inhibition of the metabolism of phenylalanine at the stage of phenylpyruvic acid. In this connection it is noteworthy that Peters and his collaborators in England have found that the oxidation and decarboxylation of pyruvic acid in certain tissues require the presence of thiamin (vitamin B_1). Thiamin apparently serves as a precursor of cocarboxylase, the latter being thiamin pyrophosphate, and it has been reported that in many tissues a dynamic equilibrium exists between free thiamin and its pyrophosphoric acid ester. Several years ago it was established that cocarboxylase is a coenzyme necessary for the decarboxylation of pyruvic acid in certain enzyme systems. The observation of Closs and Fölling that white rats on a vitamin B_1 deficient diet excrete phenylpyruvic acid when large amounts of phenylalanine are ingested and that control animals receiving thiamin chloride do not excrete phenylpyruvic acid under the same conditions is relevant. These clinical and experimental observations may be expected to stimulate further work designed to elucidate the possible relationship existing between thiamin and cocarboxylase on the one hand and the metabolic disturbance phenylpyruvica oligophrenia on the other.

1. Fölling, Asbjörn: Ztschr. f. physiol. Chem. **227**: 169, 1934.
2. Penrose, L. S.: Lancet **1**: 23 (Jan. 5) 1935.
3. Jervis, G. A.: J. Biol. Chem. **126**: 305 (Nov.) 1938.

A MEDICAL SOCIETY AND CONTAGIOUS DISEASE

While the interest of organized medicine in the public health is a matter of long record, recognition of that interest is rare. The part played by the Chicago Medical Society in the control of contagious disease is one of the principal aspects of a richly documented manuscript by Miss Webb[1] of the University of Chicago. Many entries in the minutes of the Chicago Medical Society from its formation in the fall of 1850 attest its activity both as a society and by many of its individual members in attempting to arouse the community to concerted and effective action in the control of contagious diseases. Although a city board of health existed for most of the period preceding the fire, Miss Webb obtained no evidence that it had even met in some years. The medical society demonstrated a constant interest in and activity for the best public health measures, as, for example, sound registration of vital statistics. In fact, Chicago's mortality records were apparently most inaccurate until 1868, the improvement at that time being the direct result of a petition of the Chicago Medical Society to the city council in 1866. "Through the years," Miss Webb states, "the only really sustained fight [for adequate protection against contagious disease] came from the medical profession, whose members realized the basic needs and urged reform." In commenting further on this matter she stated that while individual physicians had for a long time taken part in civic questions they naturally became more effective as members of an organized group.

INCREASING IMPORTATION OF PAPAIN

Papain is an enzyme of the proteolytic group, changing native proteins, proteoses and peptones to amino acids. The activity of papain is greatly increased by hydrocyanic acid, by hydrogen sulfide and by glutathione. It acts in an acid medium (p_H 4 to 7) and at temperatures of from 65 to 90 C. The papain of commerce is obtained from the melon tree (Carica papaya), which flourishes in tropical and subtropical regions and is obtained in the form of latex, the dried milky juice of the unripe papaya fruit. Of late, papain has been finding its greatest use in preparing "tenderized" meat. Import statistics[1] show a fourfold increase in recent years; 54,000 pounds valued at $50,000 was imported in 1932, whereas the amount in 1938 was 223,000 pounds of crude papain valued at $329,000. Ceylon is the largest exporter of papain to the United States, in 1938 sending 173,000 pounds; 36,000 pounds came from elsewhere in the United Kingdom with Japan, Siam and New Zealand contributing smaller quantities. Long recognized as a powerful proteolytic ferment, papain, which in several respects is an abnormal enzyme, seems now to be making a definite contribution to the enhancement of the esthetic side of our national dietary. Its usefulness as a therapeutic agent, however, is not recognized.

1. Webb, Constance B.: A History of Contagious Disease Care in Chicago Before the Great Fire, Dissertation to Faculty of School of Social Service Administration, University of Chicago.
1. Chemical Division, Department of Commerce, J. Indust. & Engin. Chem. News Edition **17**: 134 (Feb.) 1939.

ORGANIZATION SECTION

"ECONOMICAL ADMINISTRATION OF HEALTH INSURANCE BENEFITS"

Nothing more illustrative of the dominance of financial considerations over medical science in the administration of sickness insurance has appeared than this report of the International Labour Office.[1] Like most of the publications of this office, it is the result of the work of several commissions of experts. The material has been finally arranged by Walter Pryll, social medical officer of the International Labour Office and for many years active in the administration of sickness insurance institutions in Germany. This domination of financial considerations and the economy which it enforces cannot well be criticized once the system of sickness insurance comes into existence, but its very necessity involves such restrictions on the development of medical science and its application to the large section of the population covered by insurance as to constitute in itself an indictment of the entire principle of sickness insurance.

"Social insurance institutions must base themselves on the principle of economy and, as far as possible, make it govern all their organization and working" (p. 10). "The funds are therefore compelled to strike the best balance they can between the special needs of those insured with them and the limited means at their disposal" (p. 13). Such a program must restrict the application of many types of medical care, although the funds are required to use "all the means and methods that have been approved by science and tested in practice, in so far as they are easily available at a reasonable cost" (p. 16).

We are told that "it was the principle of economy that led the insurance institutions to engage in preventive work" and that "prevention is not only easier but also cheaper than cure and than the cost of compensation" (p. 16). No illustrations are offered, however, of the extent of such preventive work under insurance or of the results it has produced, and just a little later it is admitted that the funds "must not use any of their resources for the individual or collective prevention of disease if this form of activity is not expressly prescribed or permitted by law" (p. 19).

In spite of many cleverly worded explanations intended to show that this economical administration does not injure the practice of medicine, any one accustomed to the professional attitude in a country free from insurance institutions who reads the multitude of restrictions cannot fail to be impressed with the fact that the one dominating thought that must constantly be in the physician's mind is not the welfare of the patient but the welfare of the insurance funds.

Advocates of sickness insurance in the United States who visualize great clinics of specialists using highly expensive equipment might read with profit the statement that "it is sheer extravagance to have a patient very thoroughly examined by a specialist, with the aid of the most expensive apparatus available, before considering whether such a step is necessary or likely to be fruitful, so that in the end such additional knowledge as may be obtained is bought at too great an expenditure of material, time, and money" (p. 35). In no country do insured patients customarily receive any such service.

There is an entire chapter on the application of the principle of economy to diagnosis, which alternates between emphasis on the necessity of careful diagnosis to detect incipient diseases and numerous instances of the economic obstacles which insurance must maintain that would prevent any such diagnosis. The ideal is set up not only of the diagnosis of the disease but of the "psychophysical state of the patient," of his relations to society, and of the "prognosis and plan of treatment and cure." The reader who knew nothing of insurance might think that such a diagnosis was common under insurance, but the compiler of this volume wisely does not attempt to give any examples.

When it comes to the application of the principle of economy to therapeutics, we are told that "the private practitioner may apply any methods of diagnosis and treatment which he considers necessary so far as his patient is prepared to pay the cost, whereas a practitioner who is treating insured persons must follow the principle of economy . . ." (p. 64). We are assured that "the patient must not be required to put up with second-rate methods of treatment or with cheap measures of inferior quality selected merely on grounds of economy" but that "the necessary treatment is that which alone of all the appropriate, adequate and reasonably priced methods guarantees success and is applied only so far as is necessary to achieve the purpose of the insurance scheme" (p. 72). The assumption that the "necessary treatment" which "guarantees success" can be determined would seem to require that the insurance physician have a knowledge that exceeds medical science. The point is repeatedly emphasized that in many cases rest, massage, baths or other treatment not requiring drugs or appliances may be used for reasons of economy. Perhaps this explains the renaissance of the "naturheiler" and other cults and quacks in Germany under Hitler. The physician is constantly warned against the overuse of drugs. No complaint could be made against such a warning if really based on therapeutic reasons, but the constant emphasis on economy suggests that wholly different reasons actually govern. This is true of the recommendation that only drugs included in the special formularies be used and that proprietaries be avoided. But on this point also the emphasis on the economy angle is far greater than on the scientific.

That politics even more than economy may guide the actions of the legislators is indicated by the following, which is perhaps the most significant statement in the entire report:

"Nor can the legislative authorities be guided solely by economic considerations when drawing up the regulations concerning benefits. Financial limits may be imposed, beyond which they cannot go. They may have to reject many ideas that are acceptable from the point of view of economy and agree to others that are economically unsound simply because of the relative strength of the various political parties in the government at the time" (p. 19).

There is an entire chapter on the application of the principle of economy to preventive measures, but no mention is made of immunization, and it would appear that most of these measures would consist of good advice and cooperation with health departments and special institutions for controlling such diseases as tuberculosis.

One large section is devoted to a discussion of the principle of economy in national laws and regulations. Once more it is difficult to raise a direct objection to most of these regulations, but when they are examined as a whole they give the picture of a legal cage within which the physician is compelled to practice. He is constantly warned to watch the quantity prescribed, to see that containers are returned and used again, that only certain types of prescriptions that require the least time to compound are used, and so on.

One source of economy is never mentioned. There is no discussion of the costs of administration, of the palatial offices of insurance carriers—always so much better equipped than the hospitals—or of the swarm of administrators whose expenses must be met out of the certainly inadequate income derived from poorly paid workers.

More than half the book is devoted to the national laws and regulations designed to enforce the principle of economy in Czechoslovakia, France, Germany, Great Britain, Hungary, Poland and Yugoslavia. These laws and regulations, with their provisions for the supervision of insurance practitioners and

1. Economical Administration of Health Insurance Benefits, Studies and Reports, Series M (Social Insurance) No. 15, International Labour Office, Geneva, 1938.

control of excessive treatment and prescribing, are a complete answer to those who say that there is no restriction by lay authorities of the practice of medicine under insurance. Nearly every country provides for elaborate pricing and statistical compilation of the cost of prescriptions to establish a median or average cost for each prescription. Any physician who exceeds this cost in any considerable manner is warned and, if he does not conform, is punished. Governments and insurance carriers maintain extensive and costly systems of supervising physicians and "sick visitors" to check the work of the insurance physician and to see that he does not spend too much in treatment. Everywhere the emphasis is on cost rather than on quality of medical care.

The effect of all this on a physician cannot but be to compel him to keep constantly in the forefront of his mind not the principles of the best medical diagnosis and treatment but the "principle of economy." He knows that his professional reputation and livelihood will be destroyed if he oversteps the economy principles much more quickly than if he violates the principles of proper diagnosis and adequate treatment.

OFFICIAL NOTES

RADIO BROADCASTS

The radio broadcasts by the American Medical Association and the National Broadcasting Company, under the title Your Health, continue as previously announced each Wednesday over the Blue network of the National Broadcasting Company at 2 p. m. eastern standard time (1 p. m. central standard time, 12 o'clock mountain time, 11 a. m. Pacific time).

Starting April 30, daylight saving time takes effect in Chicago. The program will therefore be broadcast at the same hour Chicago daylight saving time, which means one hour earlier central standard time, two hours earlier mountain time and three hours earlier Pacific time. In communities where daylight saving time is in effect there will be no change in the hour of the broadcast.

Owing to network conflicts the Chicago broadcast does not occur at 1 o'clock Wednesday but there is a rebroadcast from a recording over station WENR at 8 o'clock each Monday evening, on and after May 1 (8 o'clock Chicago daylight saving time, 7 o'clock central standard time). The program broadcast each Monday is identical with the network program of the preceding Wednesday.

The next three programs to be broadcast, together with their dates and their topics, are as follows:

May 3. Healthier Mothers.
May 10. The Doctor's Workshop.
May 17. Healthier Babies.

THE ST. LOUIS SESSION

Dinner to Women Physicians

A Library Dinner will be given Monday, May 15, at 6:30 p. m. in the Tower Room at the Congress Hotel, St. Louis, at which the visiting women physicians will be the guests of the Committee on Women Physicians of the Local Committee on Arrangements, members of which will act as hostesses. Dr. Bertha Van Hoosen, Chicago, will be chairman.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—S. 835 has passed the Senate, providing compensation for disability or death resulting from injury to employees of contractors on public buildings and public works. S. 1265 and S. 2203 have been reported to the Senate, proposing among other things to add a new title to the Social Security Act whereunder an appropriation of $125,000,000 is authorized for the fiscal year ending June 30, 1941, and thereafter for each fiscal year such sum as may be necessary to enable the states to furnish financial assistance to needy handicapped individuals, defined to mean individuals not eligible for assistance through state plans approved under the titles of the Social Security Act providing for old-age assistance, aid to dependent children and aid to the blind, and who, by reason of physical or mental disability other than disability arising out of impairment of vision, are unable to perform substantial gainful employment. S. 1540 has passed the Senate, proposing to adjust the compensation of the members of the National Advisory Health Council not in the regular employment of the government. S. 1899 has passed the Senate, providing for the detail of a commissioned medical officer of the United States Public Health Service to serve as Assistant to the Surgeon General. H. R. 1776 has passed the Senate, providing for the assignment of medical officers of the United States Public Health Service for duty on vessels of the Coast and Geodetic Survey. H. R. 2296 has passed the House, proposing to restore certain benefits to World War veterans suffering from paralysis, paresis or blindness, or who are helpless or bedridden. H. R. 2320 has passed the House, providing domiciliary care, medical and hospital treatment and burial benefits to certain veterans of the Spanish-American War, the Philippine Insurrection and the Boxer Rebellion. H. R. 2987 has been reported to the House, with recommendation that it pass, proposing to authorize the Veterans' Administration to make payments to nonmilitary employees who donate blood for transfusions for veterans hospitalized in veterans' hospital facilities. H. R. 3537 has passed the Senate, with amendments, to extend the facilities of the United States Public Health Service to active officers of the Foreign Service of the United States. H. R. 5379 was defeated in the House April 20 by a vote of 234 to 118, proposing to exempt Dr. Nathan Tucker's Asthma Specific from certain labeling requirements of the Federal Food, Drug and Cosmetic Act. H. R. 5762, introduced by Representative Lea, California, has passed the House, with amendment, proposing, among other things, to postpone from June 25, 1939, to Jan. 1, 1940, the effective date of certain of the provisions of the Federal Food, Drug and Cosmetic Act that have not already gone into effect, relating principally to labeling requirements for foods, drugs, devices and cosmetics and the use of coal-tar dyes in foods, drugs and cosmetics. The bill proposes also to authorize the Secretary of Agriculture to postpone, but not beyond July 1, 1940, the effective date of certain labeling requirements of the act so far as they may be applicable to labeling which was lithographed, etched, stamped, printed or otherwise manufactured prior to Feb. 1, 1939, and which would have complied with the Food and Drugs Act of 1906, as amended. The bill also proposes to amend section 502(d) of the Federal Food, Drug and Cosmetic Act so as to require the labels of drugs containing any narcotic or hypnotic substances to state only the "name and quantity or proportion" rather than the "name, quantity, and percentage" of such substances.

Bills Introduced.—H. R. 5691, introduced by Representative Sutphin, New Jersey, proposes to amend the Federal Emergency Relief Act of 1933 for continuation of the civil works program by eliminating the requirement that an injury sustained by an employee must be of traumatic origin to entitle the employee to compensation, including medical and hospital benefits. H. R. 5841, introduced by Representative Patrick, Alabama, proposes to amend the Social Security Act by adding a new title thereto under which an appropriation of $1,000,000 will be authorized for the fiscal year ending July 1, 1940, and thereafter such sum as may be necessary, to enable the states to aid in restoration of sight to the blind by furnishing hospitalization and medical and surgical aid. H. R. 5870, introduced by Representative Angell, Oregon, proposes to authorize such federal sums as

may be necessary to pay an annuity at a rate not to exceed $50 a month to blind persons whose annual income from sources other than annuities payable under the act is less than $1,200. H. R. 5874, introduced by Representative McKeough, Illinois, proposes to include the name of Gustaf E. Lambert among those honored by an act recognizing the high public service rendered by Major Walter Reed and those associated with him in the discovery of the cause and means of transmission of yellow fever. H. R. 5884, introduced by Representative Vinson, Georgia, proposes to authorize the President to appoint for temporary service in the Navy 100 acting assistant surgeons, who shall have the rank and compensation of assistant surgeons.

STATE MEDICAL LEGISLATION

California

Bill Introduced.—A. 2795 proposes to prohibit the distribution of serums, vaccines, bacterial cultures and viruses produced other than in a laboratory licensed either by the Department of Health, the United States Public Health Service or the Bureau of Animal Industry of the United States Department of Agriculture. The bill proposes to repeal the law approved June 1, 1935, regulating the production and distribution of serums, vaccines, bacterial cultures and viruses.

Florida

Bills Introduced.—S. 149 and H. 74 propose to authorize the formation of corporations to operate nonprofit service plans whereby hospital care may be provided by the corporations or by hospitals with whom they have contracted to persons subscribing to said plans under contracts which entitle each subscriber to stated hospital care. H. 384 proposes to enact a massage practice act and to establish a board of massage examiners to examine and license persons desiring to practice massage. The bill proposes to define massage as "the use and practice of psychological, Mechanical and Material Health Sciences, to aid in purifying, cleansing and normalizing human tissues, for the preservation of [or] restoration of Health, according to the fundamental principles of anatomy, physiology, and applied Psychology, as may be required. Massage practice employs, among other agencies, Phyto-therapy, Dietetics, Psycho-therapy, Suggesto-therapy, Hydro-therapy, Zone-therapy, Biochemistry, external applications, Electro-therapy, Mechanotherapy, Mechanical and Electrical Appliances, Hygiene, first aid, Sanitation, Heliotherapy, Spinal Manipulation and Manual Bodily Manipulation." S. 211 proposes to require osteopaths to renew their licenses annually with the board of osteopathic examiners and to pay annual renewal fees of $5. As a condition precedent to annual renewal of a license, the holder thereof must present satisfactory evidence of having attended in the previous year the two day educational program as conducted by the Florida osteopathic association.

Illinois

Bills Introduced.—S. 292 proposes to enact a separate osteopathic practice act and to establish an examining committee composed of five osteopaths to examine and license persons desiring to practice osteopathy. The bill proposes to define osteopathy as "a system of practice of the healing arts in all its branches with therapeutics majoring in manipulation." The bill specifically states, however, that a license to practice osteopathy shall not permit the holder thereof to practice major operative surgery but shall entitle the holder to use the necessary minor therapeutic agents in the conduct of his practice. H. 633 proposes a procedure whereby any two or more contiguous counties may be incorporated as a tuberculosis sanatorium district and may establish and maintain a tuberculosis sanatorium with branches, dispensaries and other auxiliary institutions connected with it. S. 371 proposes to grant to a hospital treating a person injured through the negligence of another a lien on all rights of action, claims, judgments or compromises accruing to the injured person by reason of his injury. The bill proposes, however, that the lien may not exceed one fourth of the sum paid or due to the injured person.

Massachusetts

Bill Introduced.—H. 2151 is a report of the Special Commission on Osteopathy, Chiropractic, Food, Drugs and Poisons, in which, among other things, the commission (1) recommends the adoption of a separate chiropractic practice act and the establishment of an independent board of chiropractic examiners to examine and license applicants for licenses to practice chiropractic and (2) submits legislation embodying those recommendations. The commission recommends that chiropractic be defined as "the science of palpating and adjusting the articulations of the human spinal column" and that licensed chiropractors shall not be permitted to practice obstetrics, or to administer or prescribe drugs or to perform surgical operations with the use of instruments.

Michigan

Bills Introduced.—S. 428 proposes that in the management of any hospital supported wholly or in part from taxes no discrimination shall be made against the practitioners of any school of medicine recognized by the laws of the state and that all such legal practitioners shall have equal privileges in treating patients in the hospital. H. 550 proposes a new workmen's compensation act, which will provide compensation for any injury or disease arising out of and in the course of employment of an employer subject to the act. The employer is required to provide for an injured employee such medical, surgical and other attendance or treatment, nurse and hospital service, medicine, crutches and apparatus for such period as the nature of the injury or the process of recovery may require. An injured workman is to be entitled to select his own physician from a list compiled by the Department of Labor on the recommendation of the medical societies of the various counties. S. 460 proposes to enact a law to regulate the manufacture, distribution and advertising of foods, drugs, devices and cosmetics.

New Jersey

Bill Introduced.—S. 205 proposes to enact a separate chiropractic practice act and to establish a board of chiropractic examiners to examine and license persons desiring to practice chiropractic. The bill proposes to define chiropractic as "the science, art and philosophy of things natural; a system of adjusting the vertebral column and of the tissues adjacent thereto by hand for the removal of nerve interference thereby to eliminate the cause of disease." Licentiates are also to have the right to prescribe or regulate the dietary, sanitary and hygienic habits of patients.

New York

Bills Introduced.—S. 1848 and A. 2077 propose to enact a law to regulate the manufacture, distribution, advertising and branding of foods and food products. S. 1892 proposes to prohibit the practice of roentgenology except by licensed physicians, dentists and chiropodists, subject, however, to the conditions and limitations of their respective licenses. The bill proposes to define roentgenology as "that method of medical practice in which examination and demonstration of the normal and abnormal structures and parts of the human body are made by the use of roentgen rays." S. 1893 proposes to authorize the board of supervisors in any county to regulate and license the installation and operation of any machinery, equipment or apparatus to be used for the examination or demonstration of any person or thing by means of fluoroscopic exhibition or shadow imagery registered with photographic materials and the use of roentgen rays. S. 1927 proposes that the medical, dental and nursing care or treatment required for relief clients may be given in whole or in part in cash or by order or in kind, under rules and regulations made by the state board of social welfare.

Oklahoma

Bill Introduced.—H. 638 proposes to require licensed osteopaths to register annually on or before July 1 with the secretary of the state board of osteopathic examiners, to pay annual licensing fees of $2 and to condition the renewal of licenses on the submission of proof that the licentiates have attended at least two days of the annual educational program conducted by the Oklahoma State Osteopathic Association in the year preceding applications for renewal.

Pennsylvania

Bills Introduced.—S. 503 proposes to require all physicians, clinics and hospitals to report to the secretary of health of the commonwealth the name, age, sex and address of a person in whom is found sex abnormality, sex perversion or sex criminal tendencies. H. 1038 proposes to establish a separate chiropody practice act and to establish a board of chiropody examiners to examine and license persons desiring to practice chiropody. The bill proposes to define chiropody as "the diagnosis of foot ailments and the practice of minor surgery upon the feet limited to those structures of the foot superficial to the inner layer of fascia of the foot, the palliative and mechanical treatment of deformities and functional disturbances of the feet and the making of models of the foot and toes or any one or more of such activities." Chiropody is not to include the right to treat communicable or constitutional diseases of the bones, ligaments or muscles of the feet or any other part of the body or to perform any operation on the bones, ligaments, muscles or tendons of the feet involving the use of any cutting instrument or the right to use any anesthetic other than local. H. 1098 proposes to authorize the organization of nonprofit healing arts service corporations to provide to subscribers healing art services, which the bill defines to mean the general and usual services rendered and the care administered by doctors of medicine, doctors of osteopathy, dentists, registered nurses and registered pharmacists.

Texas

Bill Introduced.—H. 489 proposes to enact a new workmen's compensation act requiring employers to pay stated percentages of their payroll into a monopolistic state compensation fund from which will be paid compensation to workmen suffering accidental injury arising out of and in the course of their employment or contracting any one or more of some twenty-six enumerated occupational diseases. Workmen injured or disabled are to be furnished reasonable medical aid, hospital service and medicine and other such treatment as may be necessary to effect a cure from their industrial injuries or disabilities. Apparently, however, workmen are not to be allowed to select physicians of their own choice. However, "if the physician, hospital services, medicines, as furnished by the Board [the administrative agency of the fund] shall not be acceptable to the injured workman, he shall have the right to employ or use such services of his own choice, provided that he submit to proper examination by the physician appointed by the Board, at the expense of the Board."

Wisconsin

Bill Introduced.—A. 692 proposes that the provisions of the medical practice act shall not apply "to a total number of fifty medical physicians who may have been engaged in the actual practice of medicine or surgery in Germany, Austria, Czechoslovakia, or Poland" to whom licenses are issued in the manner set forth in the bill. Briefly, the bill proposes that during the year commencing July 1, 1939, any physician residing in the state who within the last ten years may have been engaged in the continuous practice of medicine in the countries noted may have a license issued to him by the board of medical examiners if he files an affidavit concerning his moral and professional character and the extent and nature of his practice in Europe and also presents an affidavit signed by at least two licensed physicians in the state concerning their knowledge of the applicant. The bill proposes that the number of licenses issued shall not exceed fifty for the year indicated and that no more than five such licenses may be issued in any one calendar month.

WOMAN'S AUXILIARY

Arkansas

Mrs. J. B. Crawford, president, auxiliary to the state medical society, and Dr. George V. Lewis, president, Pulaski County Medical Society, spoke at the February meeting of the auxiliary to the Pulaski County Medical Society. Members of the federated clubs of Little Rock were guests.

At the January meeting of the auxiliary to the Bowie and Miller counties medical societies, Mrs. Kirk Mosley spoke on "Doctors' Wives of the Far East." A collection of Chinese articles was on exhibit.

At the February meeting of the auxiliary to the Sebastian County Medical Society Dr. F. G. Krock spoke on cancer control.

California

Mrs. Charles C. Tomlinson, president, auxiliary to the American Medical Association, spoke before the board of directors of the auxiliary to the California Medical Association in San Francisco February 17.

Dr. Walter H. Brown of Stanford University spoke on "Health Service in Scandinavia" at the January meeting of the auxiliary to the Alameda County Medical Association.

More than 300 doctors and their wives attended the social meeting of the auxiliary at the Athens Athletic Club February 15.

At the January meeting of the auxiliary to the Fresno County Medical Association it was reported that *Hygeia* had been placed in beauty parlors, barber shops, schools, public libraries and clubs. Drs. George W. Walker and A. E. Anderson spoke on "Socialized Medicine." At the February meeting, Mrs. Harold G. Trimble, state Hygeia chairman, spoke on "The Value and Purpose of *Hygeia* to the Public." Dr. Elliot Sorsky spoke on "Comparison of Health Conditions in India with Those in America."

The auxiliary to the Orange County Medical Association has voted to renew twelve subscriptions to *Hygeia* and the *Readers Digest* in Braille for blind persons in Orange County.

The auxiliary to the Riverside County Medical Association was addressed by Dr. Frances Keller Harding on "Medicine Down Under," showing a film of the Fiji Islands.

The auxiliary to the Los Angeles Medical Association met at the Orthopedic Hospital, Los Angeles, January 24. Dr. Robert L. Carroll spoke on "The Therapeutic Theatre," an educational activity provided for hospital patients. The guest speaker was Mme. Gosta Dohlman, wife of Professor Dohlman of Lund University of Sweden.

Illinois

Dr. John R. Neal, Springfield, spoke on "Current Legislative Problems" at a meeting of the auxiliary to the Chicago Medical Society February 1.

Pennsylvania

The auxiliary to the Philadelphia County Medical Society held its annual Christmas Bazaar at the County Medical Society Building December 2 for the benefit of its philanthropies. Dr. Rufus S. Reeves, president-elect of the county medical society, was the speaker at the meeting December 13.

Virginia

The auxiliary to the James City-Williamsburg Medical Society met at the home of the president, Mrs. Frederick R. Persons, January 10, when Dr. E. B. Kilby spoke on socialized medicine.

The auxiliary to the Petersburg Medical Society met at the home of the president, Mrs. Allan Barker, January 23, when Mrs. Wright Clarkson gave a book review on the "Life of Rosalie Slaughter Morton," woman surgeon. A linen shower for the Community Hospital was held February 28. The auxiliary is supporting a memorial bed at the Blue Ridge Sanatorium.

Wisconsin

The auxiliary to the Brown-Kewaunee-Door County Medical Society met December 1 in Green Bay. Mr. J. G. Crownhart, secretary of the State Medical Society of Wisconsin, spoke on "Sickness Care for Wisconsin." There were 125 women in attendance.

Mrs. Robert E. Fitzgerald, president of the auxiliary to the State Medical Society of Wisconsin, spoke at a meeting of the auxiliary to the Sheboygan Medical Society at the home of Mrs. Fred Nause Jr. January 11.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARIZONA

Refresher Course.—The division of maternal and child hygiene of the state department of public health sponsored a refresher course in gynecology and obstetrics in Phoenix April 13-15. Dr. Norman F. Miller, professor of obstetrics and gynecology, University of Michigan Medical School, Ann Arbor, was the instructor.

CALIFORNIA

The Lane Lectures.—Dr. Thomas M. Rivers, director, Hospital of the Rockefeller Institute for Medical Research, New York, will deliver the twenty-seventh course of Lane Lectures of Stanford University School of Medicine, San Francisco, May 22-26. The general title for the lectures will be "Viruses and Virus Diseases."

COLORADO

Portrait of Dr. Edward Jackson.—Dr. Edward Jackson, Denver, observed his eighty-third birthday March 30. As a tribute from friends, a portrait is being painted by Alfred J. Wands, which will be exhibited at a special dedication ceremony but will be hung finally in the Wills Eye Hospital, Philadelphia, where Dr. Jackson received his early training. Born in West Goshen, Pa., Dr. Jackson graduated at the University of Pennsylvania School of Medicine in 1878. He practiced in West Chester and Philadelphia, becoming professor of diseases of the eye at the Philadelphia Polyclinic in 1888. He was surgeon to the Wills Eye Hospital from 1890 to 1894 and from 1896 to 1898. He practiced in Denver from 1894 to 1896 and has practiced there since 1898. He was professor of ophthalmology at the University of Colorado School of Medicine from 1905 to 1921; president of the American Board for Ophthalmic Examinations, 1916-1917; president of the Colorado Commission for the Blind, 1925, and editor of the *American Journal of Ophthalmology* from 1918 to 1928.

ILLINOIS

Pneumonia Control Program.—The state department of public health in cooperation with the U. S. Public Health Service recently launched a program to control pneumonia. Aside from the educational aspects of the plan, efforts are being made to standardize and approve existing laboratories. Antipneumococcus serum for the treatment of type-specific pneumonia has been made available to physicians regardless of the financial status of the patient. Therapeutic antipneumococcus horse serum for types I, II, V, VII, IV and VIII are available in certain areas throughout the state; as the program expands other areas will be added to include the whole state. The only requirements necessary for the physician to obtain serum are: That the bacteriologic diagnostic work for his cases of pneumonia be performed in laboratories which meet the minimum requirements of the state department of public health for typing of pneumonia, and that a treatable type of pneumococcic infection is found; that the duration of the disease has not been longer than ninety-six hours; that the proper report on the use of the serum be filled in, and that all unused vials of serum be returned immediately. The original grant from the federal government was $50,000, of which $38,000 was for serum. When this sum was expended, the state legislature made an emergency appropriation of $75,000 for serum.

Chicago

Society News.—The Chicago Gynecological Society was addressed April 21 by Drs. Paul H. Wosika and Chauncey C. Maher on "The Coexistence of Prolapse of the Uterus, Urologic Pathology and Hypertensive Vascular Disease" and Hilliard E. Miller and Edward Perry Thomas, New Orleans, "Strictures of the Cervix."——A symposium on skull fractures will be presented before the North Shore Branch of the Chicago Medical Society May 9 by Drs. Eric Oldberg, Adrien Verbrugghen and Harold C. Voris.

KANSAS

State Medical Meeting at Topeka.—The eightieth annual session of the Kansas Medical Society will be held at the Masonic Temple May 1-4 under the presidency of Dr. Noble E. Melencamp, Dodge City. The Shawnee County Medical Society is acting as host. Out of state speakers will include:

Dr. Claude D. Head Jr., Washington, D. C., Supportive Measures in the Treatment of Pneumonia.
Dr. John A. Borghoff, Omaha, Contact Dermatoses.
Dr. Waltman Walters, Rochester, Minn., Conservative Surgery of the Kidney.
Dr. James M. Martin, Dallas, Texas, Radiation Therapy in Malignant Diseases.
Dr. Julius Jensen, St. Louis, Treatment of Congestive Heart Failure.
Dr. Arnold S. Jackson, Madison, Wis., The Injection Treatment of Hernia.
Dr. Avery D. Prangen, Rochester, Minn., The Early Diagnosis and Management of the Cross-Eyed Child.
Dr. William S. Horn, Fort Worth, Texas, Chronic Undulant Fever as a Cause of Neurasthenia.
Dr. Jay A. Myers, Minneapolis, Early Diagnosis of Pulmonary Tuberculosis.
Dr. Joseph L. Baer, Chicago, Obstetrical Hemorrhages.
Dr. Mynie G. Peterman, Milwaukee, Epilepsy in Childhood.
Dr. Roy R. Grinker, Chicago, Newer Knowledge of the Central Vegetative Nervous System.
Dr. Louis J. Birsner, St. Louis, The Applied Surgical Anatomy of the Sinuses.

There will be round table luncheons in which the guest speakers will take part. Dr. Melencamp will deliver his presidential address Tuesday afternoon, following the address of welcome by Dr. William C. Menninger, Topeka, president, Shawnee County Medical Society. There will be a stag banquet Monday following the golf and trap shooting tournaments. A luncheon for county society secretaries will be held Wednesday at the Kansas Hotel and all alumni banquets have been planned for Tuesday evening. The annual banquet and dance will be held Wednesday evening when Mr. Robert L. Lund, St. Louis, the guest speaker, will discuss "The Doctor's Stake in Free Enterprise."

KENTUCKY

Lectures on Pediatrics.—A series of lectures on pediatrics will be offered at the Children's Free Hospital, Louisville, beginning April 26 and continuing on Wednesdays until July. The lectures will cover all the principal diseases of children and one hour a day will be given to presentation of interesting cases in the hospital. Dr. Philip F. Barbour is in charge of the course.

Society News.—The Henry County Medical Society was recently reorganized with the following officers: Drs. Walter W. Leslie, New Castle, president; Maurice Bell Jr., Eminence, vice president, and Owen M. Carroll, New Castle, secretary. ——Physicians of Carroll, Gallatin and Trimble counties recently organized a tri-county medical society at a meeting in Carrollton with Dr. J. Samuel Brown, Ghent, as president, and Dr. Harold Carl Boylen, Carrollton, as secretary. ——Dr. Richard Alexander Bate, Louisville, addressed the Boyd County Medical Association, Ashland, April 4 on "Newer Phases of Practical Endocrinology."

MARYLAND

Dean Lewis Resigns as Professor of Surgery.—Dr. Dean D. Lewis, professor of surgery at Johns Hopkins University School of Medicine, Baltimore, has resigned on account of ill health, it is reported, and will become professor emeritus. Dr. Lewis was born in Kewanee, Ill., in 1874 and graduated at Rush Medical College, Chicago, in 1899. He joined the staff of his alma mater the following year as assistant in anatomy and subsequently served as instructor in surgery, associate professor of surgery and from 1920 to 1924 as professor. He also served in this last capacity at the University of Illinois College of Medicine from January to July 1925, when he went to Johns Hopkins. Dr. Lewis's membership in medical societies includes the American Surgical Association, the American Association of Anatomists, the American Physiological Society, the American Society of Clinical Surgery, the Interurban Surgical Society and the Southern and Western surgical societies. He is an honorary member of the Wisconsin State Medical Society and a member of several foreign surgical societies. During the World War he served as lieutenant colonel and was awarded the Distinguished Service Medal. He is also a member of the Medical Council of the Veterans' Administration. He has been editor-in-chief of the *Archives of Surgery* since its establishment in 1920 and is also editor of a system of surgery. Dr. Lewis has been a member of the House of Delegates of the American Medical

Association, representing the Section on Surgery in 1915, 1916 and 1917. He was also secretary of the Section on Surgery, 1912-1913, and chairman, 1919-1920. In 1933 he was President of the American Medical Association and in 1931 a member of its Council on Medical Education and Hospitals.

MICHIGAN

Symposium on Medical Economics.—The Wayne County Medical Society, Detroit, devoted its meeting at the Detroit Art Institute April 10 to a discussion of medical economics. The speakers were:

Lent D. Upson, Ph.D., The Economic Causes of Social Unrest.
Dr. Henry A. Luce, Comments on the Wagner Bill.
Mr. William J. Burns, Lansing, Voluntary Medical Service Insurance.
Mr. John R. Mannix, Group Hospital Insurance.

Society News.—Dr. Richard M. Davison, Chicago, discussed "Surgical Treatment of Pulmonary Tuberculosis, with Special Reference to a Relatively New Procedure—Extrapleural Pneumothorax" before the Kalamazoo Academy of Medicine March 21.——Dr. Lawrence Reynolds, Detroit, discussed "Cystic Disease of the Lungs" before the Jackson County Medical Society March 21.——Dr. Harold M. Teel, Brookline, Mass., addressed the Calhoun County Medical Society, Battle Creek, March 7 on "Use and Abuse of Pituitrin in the Conduction of Labor."

MINNESOTA

The Bell Lecture on Tuberculosis.—Dr. Henry C. Sweany, Chicago, presented the John W. Bell Lecture on tuberculosis before the Hennepin County Medical Society April 3; his subject was "The Tuberculosis Problem Viewed in the Light of Recent Pathologic Studies." The lecture is sponsored by the Hennepin County Tuberculosis Association.

MISSOURI

The Terry Lecture.—Dr. Lewis Hill Weed, professor of anatomy, Johns Hopkins University School of Medicine, Baltimore, will give the first lecture under the Robert J. Terry Lectureship Foundation, Wednesday, May 17, at 4:30 p. m., in the auditorium of the Washington University School of Medicine, Scott and Euclid avenues, St. Louis. His subject will be "Anatomy in the Medical Curriculum." The lecture is open to the public without charge.

NEBRASKA

Society News.—Dr. Peter T. Bohan, Kansas City, Mo., addressed the Omaha-Douglas County Medical Society, Omaha, March 14 on coronary disease.——Drs. Paul M. Bancroft and Archibald R. McIntyre, Omaha, addressed the Lancaster County Medical Society, Lincoln, recently on "Relationship of the Pineal Gland to Sexual Precocity" and "Experimental Work with Vitamins" respectively.

NEW YORK

Society News.—Dr. Perrin H. Long, Baltimore, addressed the Medical Society of the County of Westchester, White Plains, April 18, on "Clinical Use of Sulfanilamide, Sulfapyridine and Allied Compounds."——Dr. John C. McClintock, Albany, addressed the Dutchess County Medical Society, Poughkeepsie, April 12 on "Some Thyroid Problems."——Drs. Paul V. Newland and Adrian S. Taylor, Clifton Springs, addressed the Ontario County Medical Society, Clifton Springs, April 11 on "Diabetic Coma" and "Common Diseases and Injuries of the Hip" respectively.——Dr. William H. Hobbs, Binghamton, addressed the Broome County Medical Society, Binghamton, April 11 on transurethral resection in the treatment of vesical neck interference.——Dr. Louis C. Kress, Buffalo, addressed the Onondaga County Medical Society, Syracuse, April 4 on "The Part of the General Practitioner in the Control of Cancer" and the proposed state plan for cancer control.——Robert Sealock, Ph.D., Rochester, addressed the Jefferson County Medical Society March 9 on "Vitamins from a Functional Viewpoint."

New York City

Society News.—Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, will address the Medical Society of the County of Kings, Brooklyn, May 23 on "Current Aspects of Medical Legislation."

Plans for the Twelfth Graduate Fortnight.—The New York Academy of Medicine announces that its twelfth Graduate Fortnight will be held from October 23 to November 3. The subject this year will be "The Endocrine Glands and Their Disorders." A complete program and registration blank may be secured by addressing Dr. Mahlon Ashford, The New York Academy of Medicine, 2 East One Hundred and Third Street, New York.

Obstetrics and Infantile Paralysis.—Drs. Samuel Kleinberg and Morris T. Horwitz are conducting at the Hospital for Joint Diseases an investigation of the obstetric difficulties in patients who have had infantile paralysis. The study is being conducted under a grant from the National Foundation for Infantile Paralysis. Physicians who may know of any such cases are asked to communicate with Dr. Kleinberg or Dr. Horwitz, care of the Research Department, Hospital for Joint Diseases, One Hundred Twenty-Third Street and Madison Avenue, New York.

Convalescent Measles Serum Available.—The New York Department of Health directs attention to its service for providing convalescent measles serum to hospitals and physicians. The serum is prepared in the Manhattan Convalescent Serum Laboratory in the health department's William Hallock Park Laboratory from blood obtained from persons recovered from measles. It is proved sterile and Wassermann negative before it is released, its distribution has been licensed and is under the supervision of the U. S. Public Health Service. Because the laboratory is a nonprofit organization, the serum is furnished to hospitals and physicians at cost of production. Further information may be obtained from Dr. William Thalhimer, director of the laboratory, Fifteenth Street and East River.

Health Precautions at World's Fair.—To safeguard the health of visitors at the New York World's Fair, the municipal department of health has established a branch of its activities on the exposition grounds to enforce the special rules of sanitation that have already been set up. A staff of twenty-four physicians, assisted by thirty nurses, will be in attendance at all times. There are seven first aid stations, each to provide a waiting room, surgery, nurses' and physicians' rooms, and wards for men and women. Serious cases will be temporarily hospitalized and transfer made later to outside hospitals by ambulance. The Fair Corporation operates five air-conditioned ambulances and a truck with portable x-ray equipment. The truck is also fitted up as a developing room, making possible immediate roentgenographic diagnosis. A section of pneumatology has been established at the fair, covering a wide range program in this field of the prevention of asphyxial death. Steps have been taken to enforce all regulations pertaining to the examination of food handlers and food establishments and to the disposal of garbage. Under the terms of these regulations, all glasses, cutlery and crockery used in food purveyance anywhere in the fair are required to be properly washed in a solution of soap, soda or other suitable cleansing powder and treated before each use with a final rinse of hot water at 175 F. for a period of one minute, the temperature to be registered by a thermometer. These installations must be equipped with a locking and timing device to guarantee the time required. Food handlers will be examined once a month and a card issued which must be produced on request by health inspectors. Every effort has been made to eliminate all breeding places of mosquitoes and other insects on the fair site.

NORTH CAROLINA

Society News.—Speakers at a meeting of the Catawba Valley Medical Society, Lenoir, March 14, were Drs. Frederick M. Dula, Lenoir, on "Intestinal Obstruction"; Yates S. Palmer, Valdese, "Diagnosis and Treatment of Anal Fissure" and Alfred A. Kent Jr., Granite Falls, "Epidemic of Acute Benign Lymphocytic Meningitis."——Dr. William B. Porter, Richmond, Va., addressed the Wake County Medical Society, Raleigh, March 9 on "Nutritional Deficiencies and Their Relation to the Clinical Course of Heart Disease."——Dr. Maurice Barnes Woodhall, Durham, addressed the Guilford County Medical Society, Greensboro, April 7 on "Intervertebral Disk Displacement: A Common and Remediable Cause for Sciatica and Back Pain."——Dr. Irving Graef, New York, addressed the Buncombe County Medical Society, Asheville, April 3 on "Advances in the Pathology of Renal Disease."

NORTH DAKOTA

State Medical Meeting at Fargo.—The annual meeting of the North Dakota State Medical Association will be held in Fargo at the city auditorium May 8-10. The guest speakers listed on a tentative program include:

Dr. Elmer M. Jones, St. Paul, Diagnosis and Management of the Surgical Gallbladder.
Dr. Henry E. Michelson, Minneapolis, Problems of Latent and Wassermann-Fast Syphilis; Dermatology for the General Practitioner.

Dr. Louis A. Buie, Rochester, Minn., Office and Hospital Management of Ano-Rectal Diseases.
Dr. Frank J. Hirschboeck, Duluth, Minn., Cardiac Emergencies; Diagnosis and Treatment of Gastrointestinal Hemorrhage.
Dr. Solon Marx White, Minneapolis, Hypertension.
Dr. Frederick C. Rodda, Minneapolis, An Approach to Some Common Behavior Problems.

Among the North Dakota physicians who will present papers are:

Dr. Leonard W. Larson, Bismarck, Medical Legislation.
Dr. Archibald D. McCannel, Minot, Diagnosis and Treatment of Eye, Ear, Nose and Throat Conditions Which Are of Particular Interest to the General Practitioner.
Dr. Harry J. Fortin, Fargo, Emergency Orthopedic Problems.
Dr. George A. Dodds, San Haven, Indication and Technic of Artificial Pneumothorax, Thoracoplasty and Extrapleural Pneumothorax in the Treatment of Pulmonary Tuberculosis.

OHIO

Another Society of Anesthetists.—The Ohio Society of Anesthetists will hold its organization meeting at the Hotel Waldorf, Toledo, May 4, in joint session with the American Society of Anesthetists. The meeting will open with clinics by the Toledo Society of Anesthetists, following which a constitution will be adopted by the state society and the election and installation of officers will take place. The speakers will include:

Dr. Maurice P. Cooper, Toledo, The Anesthetic Fire and Explosion Hazard.
Dr. Frederic Schreiber, Detroit, Cerebral Anoxia and Anesthesia.
Dr. John S. Lundy, Rochester, Minn., Intravenous Anesthesia.
Dr. Brant B. Sankey, East Cleveland, Combined Inhalation and Spinal Anesthesia.
Dr. Hubert R. Hathaway and M. Digby, Madison, Wis., A Free Air-Way Below the Larynx.

A business session of the American Society of Anesthetists will be held in the evening.

PENNSYLVANIA

Society News.—Dr. Richard A. Kern, Philadelphia, addressed the Lebanon County Medical Society, Lebanon, April 11 on clinical allergy.——Dr. Ralph M. Tyson, Philadelphia, was the speaker at a meeting of the Washington County Medical Society, Washington, April 12 on "Care of the Newborn Child."——At a meeting of the Cambria County Medical Society, Johnstown, April 13 Dr. Stanley P. Reimann, Philadelphia, gave an address on cancer.——Dr. Joseph H. Barach, Pittsburgh, addressed the Fayette County Medical Society, Uniontown, April 6, on "Simplified Treatment of Diabetes."

Philadelphia

University News.—Dr. Arthur D. Kurtz, who died January 21, left a bequest of $4,000 to Temple University to endow a scholarship in memory of his son, who died while a student at Temple University High School.

Personal.—Dr. Leopold S. Vaccaro has resigned as medical director of the state workmen's insurance fund, department of labor and industry, to return to private practice.——Friends and co-workers of Dr. John Claxton Gittings gave a dinner in honor of his sixty-fifth birthday March 13 at the Barclay Hotel. Dr. Albert Graeme Mitchell, Cincinnati, was toastmaster and presented to the University of Pennsylvania a portrait of Dr. Gittings, contributed by his friends. Dr. Gittings is William H. Bennett professor of pediatrics at the university, from which he graduated in 1895.——Dr. George W. Miller, Norristown, has been appointed professor of general anatomy in the Temple University School of Dentistry to succeed the late Dr. Addinell Hewson. Dr. Miller was formerly associate in anatomy at Jefferson Medical College and was at one time on the staff of the department of applied anatomy at Temple University School of Medicine.——At the recent Founder's day of Temple University, when awards were presented to alumni for conspicuous service, Dr. James Marsh Alesbury received the medical award.

SOUTH CAROLINA

Colonel Moncrief Appointed Superintendent of Sanatorium.—Col. William H. Moncrief, director of the Army and Navy General Hospital, Hot Springs National Park, Ark., has been appointed superintendent of the South Carolina Tuberculosis Sanatorium, State Park, to succeed Dr. Ernest Cooper, who is retiring after many years' service. Colonel Moncrief will assume the position about May 1, when he is eligible for retirement from the army, according to a newspaper account. A graduate of Southern Medical College, Atlanta, in 1897, Colonel Moncrief served in the Spanish-American War and after a period of private practice in Atlanta entered the army in 1902. He served overseas in the World War and since 1920 has commanded Fitzsimons, Sternberg, William Beaumont and Walter Reed general hospitals of the army previous to his service at the general hospital in Hot Springs National Park. Dr. Cooper was made the first superintendent of the sanatorium in 1915, when it had sixteen beds in an open pavilion. It now has a capacity of 500 patients. Dr. Cooper was born in North Carolina and graduated from Johns Hopkins University School of Medicine, Baltimore, in 1910.

TEXAS

State Medical Meeting at San Antonio.—The seventy-third annual session of the State Medical Association of Texas will be held at the Gunter Hotel, San Antonio, May 9-11, under the presidency of Dr. Ernst W. Bertner, Houston. Out of state speakers will include:

Dr. Irvin Abell, Louisville, President of the American Medical Association, Medicine in the Changing Social Order.
Dr. John Zahorsky, St. Louis, Psychology in Pediatrics.
Dr. Hubley R. Owen, Philadelphia, What Are the Duties and Responsibilities of the General Practitioner in the Treatment of Fractures? Unrecognized Fractures.
Dr. Eugene P. Pendergrass, Philadelphia, Irradiation Therapy of Infections.
Dr. Wiley R. Buffington, New Orleans, Medical Ophthalmology and the General Practitioner.
Dr. James N. Baker, Montgomery, Ala., A Plea for Greater Unity Between the Medical and Public Health Professions.
Dr. Charles F. Craig, San Antonio, Modern Treatment of Malaria Infections.
Dr. Chester S. Keefer, Boston, Diagnosis of the Causes of Obscure Fever.
Dr. Russell L. Haden, Cleveland, Use of Iron and Liver in the Treatment of Anemia.
Dr. Hugh H. Young, Baltimore, The Prostate: Medical and Surgical Aspects.
Dr. Henricus J. Stander, New York, General Considerations of the Toxemias of Pregnancy.

With the Bexar County Medical Society as host, an elaborate program of entertainment has been planned including golf, skeet and trap shoot, alumni banquets and luncheons. Other societies meeting during this time include the Texas Railway and Traumatic Surgical Association, Texas Neurological Society, Texas Association of Medical Anesthetists, Texas Society of Gastro-Enterologists and Proctologists and Texas Dermatological Society. The woman's auxiliary to the State Medical Association of Texas will hold its twenty-first annual session.

WASHINGTON

New Committees of State Society.—The board of trustees of the Washington State Medical Association at a meeting in January created two new committees, one on public relations and one on postgraduate medical education. Dr. Clark C. Goss, Seattle, is chairman of the committee on public relations and the members are Drs. Henry S. Atwood, Yakima; Jo B. Blair, Vancouver; John C. Lyman, Walla Walla; Sydney M. MacLean, Tacoma; Edwin A. Nixon, Seattle, and Otto M. Rott, Spokane. Dr. Homer D. Dudley, Seattle, is chairman of the committee on postgraduate medical education and members are Drs. Donald G. Evans, Richard J. O'Shea and Charles E. Watts, all of Seattle.

GENERAL

Meeting of Chest Physicians.—The American College of Chest Physicians will hold its annual meeting at the Chase Hotel, St. Louis, May 13-14, under the presidency of Dr. Champneys H. Holmes, Atlanta, Ga.

Nu Sigma Nu Luncheon.—The annual Nu Sigma Nu Fraternity alumni luncheon will be held at the Statler Hotel in St. Louis, Wednesday, May 17, during the period of the annual session of the American Medical Association. Additional information may be had from Dr. Drew Luten, 3720 Washington Boulevard, St. Louis.

Dr. Spies Awarded Phillips Medal.—Dr. Tom D. Spies, associate professor of medicine, University of Cincinnati College of Medicine, Cincinnati, was awarded the John Phillips Memorial Medal by the American College of Physicians at its annual meeting in New Orleans March 29. Dr. Spies was given the medal for "outstanding contributions to the science of nutrition and particularly for his studies on the nature and character of pellagra." Dr. Spies graduated at Harvard Medical School in 1928.

Advisory Committee to the Red Cross.—Dr. Livingston Farrand, Brewster, N. Y., has been made chairman of a medical advisory committee to the American Red Cross, it was announced March 15. Other members of the committee are

Drs. Thomas Parran, surgeon general, U. S. Public Health Service, Washington, D. C.; Waller S. Leathers, dean, Vanderbilt University School of Medicine, Nashville, Tenn.; David P. Barr, professor of medicine, Washington University School of Medicine, St. Louis; Martha M. Eliot, assistant chief of the Children's Bureau, Washington, D. C.; Ross T. McIntire, surgeon general, U. S. Navy; Charles R. Reynolds, surgeon general, U. S. Army, and Edwards A. Park, pediatrician of Johns Hopkins Hospital, Baltimore.

Research in Ophthalmology.—The Association for Research in Ophthalmology, Inc., will hold its tenth annual meeting in St. Louis May 16. The following program will be presented:

Dr. Theodore E. Sanders, St. Louis, Experimental Ocular Hypersensitivity.
Drs. Theodore L. Terry, Boston; Julian F. Chisholm Jr., Savannah, Ga., and Albert L. Schonberg, Cleveland, Studies on Surface Epithelium Invasion of the Anterior Segment of the Eye.
Dr. Maynard A. Wood, Iowa City, A Study of Methemoglobin-Producing Organisms in Ocular Inflammations.
George K. Smelser, Ph.D., New York, Relation of Muller's Orbital Muscle to the Pathology of Retrobulbar Tissues Obtained in Experimentally Produced Exophthalmos.
Dr. Earl L. Burky, Robert Redvers Thompson, Ph.D., and Helen D. Zepp, A.B., Baltimore, Ocular Reactions of Horses and Rabbits Infected with Strains of Brucella Recovered from Horses with Periodic Ophthalmia.
Dr. James H. Allen, Iowa City, Staphylococcus Conjunctivitis—Experimental Reproduction with Staphylococci.
Louis Julianelle, Ph.D., St. Louis, An Immunological Study of Trachoma.
Dr. Arthur A. Knapp, New York, Vitamin D Complex in Myopia; Etiology, Pathology and Treatment.

Dr. Stevenson Succeeds Dr. Hincks.—Dr. George S. Stevenson, New York, director of the division of community clinics of the National Committee for Mental Hygiene, has been appointed medical director to succeed Dr. Clarence M. Hincks. Dr. Hincks has been dividing his time since 1931 between the national committee and the National Committee on Mental Hygiene of Canada and now returns to the latter organization. Dr. Stevenson graduated from Johns Hopkins University School of Medicine, Baltimore, in 1919. After graduation he taught psychiatry at Cornell University Medical College, New York, and the University of Minnesota Medical School, Minneapolis, until he joined the National Committee for Mental Hygiene in 1926 as field consultant for the division on community clinics. He became director of the division in 1927. He is active in various organizations for mental hygiene and has been secretary and president of the American Orthopsychiatric Association.

Medical Women's Association Meeting.—The twenty-fourth annual convention of the American Medical Women's Association will be held at the Hotel Jefferson, St. Louis, May 12-14. A banquet honoring past presidents of the association will open the session, at which Drs. Harriet S. Cory and Helen L. B. Gage, St. Louis, will speak on "What Next for Social Hygiene?" and "The Influence of the Autonomic System upon Certain Diseases of the Upper Respiratory Tract," respectively. Other speakers on the program will include:

Dr. Aphrodite M. J. Hofsommer, Webster Groves, Mo., Hard of Hearing in the Public Schools.
Dr. Lois C. Wyatt, Kirkwood, Mo., Meningitis Complicating a Case of Chickenpox.
Dr. Ellen S. Loeffel, Webster Groves, Mo., Recent Developments in the Endocrine Therapy of Menstrual Disorders.
Dr. Mary Alice Townsend DeMotte, Phillipsburg, Kan., Status of Medical Practice in Western Kansas.
Dr. Lillian R. Smith, Lansing, Mich., Maternity and Child Welfare.

At the inaugural banquet Saturday evening Dr. Margaret G. Smith, St. Louis, will discuss "The St. Louis Encephalitis" and Dr. Nelle S. Noble, Des Moines, will present the inaugural address on "Women in Medicine."

The Twenty-Fifth Annual Golf Tournament.—Fifty trophies and prizes will be awarded in the nine events of the twenty-fifth annual tournament of the American Medical Golfing Association at the banquet at Norwood Hills Country Club, St. Louis, May 15. To reach the country club drive out Florissant Road to Lucas and Hunt Road, then north to the country club. This is a thirty-six hole competition, beginning at 7:30 a. m. and 2:30 p. m. Only active fellows of the American Medical Golfing Association may compete for prizes. Members should bring their membership cards to the tournament to facilitate registration. The dinner, the green fees for both courses, tournament fee, refreshments, entertainment and prizes are all covered by the $6 fee. New fellows of the golfing association pay an additional enrollment fee of $3. All members of the golfing association are cordially invited to attend this silver anniversary of the American Medical Golfing Association. Additional information will be provided by Bill Burns, executive secretary, 2020 Olds Tower, Lansing, Mich.

Association of the History of Medicine.—The fifteenth annual meeting of the American Association of the History of Medicine will be held at the Hotel Chalfonte, Atlantic City, N. J., April 30-May 1, under the presidency of Dr. Walter R. Steiner, Hartford. The speakers will include:

Morris C. Leikind, Washington, D. C., An Episode in the History of Smallpox Vaccination in New Hampshire.
Walton B. McDaniel, Ph.D., Philadelphia, The Place of the Amateur in the Writing of Medical History.
Dr. Howard Dittrick, Cleveland, Nursing Cans.
Dr. Franklin H. Church, Salem, N. J., Syphilis of the Center of the Face.
John W. Draper, Ph.D., Morgantown, W. Va., The Old Age of King Lear.
Dr. Savas T. Nittis, Detroit, The Hippocratic Oath in Reference to Lithotomy. A New Interpretation, with Historical Notes on Castration.
Dr. Iago Galdston, New York, Ideological Basis of Discoveries.
Dr. David Riesman, Philadelphia, Clinical Teaching in America with Some Remarks on Early Medical Schools.
Dr. Jabez H. Elliott, Toronto, John Gilchrist, 1792-1859, A New England Physician in Upper Canada.
Dr. George Rosen, Brooklyn, Occupational Diseases of English Seamen During the Seventeenth and Eighteenth Centuries.
Albert Deutsch, New York, Provision for the Sick Poor in Colonial Times.
Dr. Robert S. Drews, Detroit, The History of the Care of the Sick Poor in Detroit.

Dr. Steiner will deliver his presidential address Monday evening on "Some of Louis' Distinguished American Pupils" and Dr. William G. Leaman Jr., Philadelphia, will discuss "Medical History in Clinical Teaching."

Society for Investigative Dermatology.—The second annual meeting of the Society for Investigative Dermatology will be held at the De Soto Hotel, St. Louis, May 16. Dr. Joseph V. Klauder, Philadelphia, will deliver the presidential address, on "Clinical and Experimental Study of Interstitial Keratitis." Other speakers will include:

Dr. Cornelius P. Rhoads, New York, The Physiological Disturbance Associated with Premalignant Changes of the Oral Cavity.
Irvin H. Blank, Ph.D., Boston, *p*H Measurements on the Surface of Normal Skin.
Dr. Matthew Walzer, Brooklyn, Contact Reaction in Atopic Children.
Dr. Horton C. Hinshaw and W. H. Feldman, D.V.M., Rochester, Minn., A Histopathologic Study of the Intracutaneous Tuberculin Reaction in the Human Being.
Dr. Carl W. Laymon, Minneapolis, Histamine in the Treatment of Urticaria and Atopic Dermatitis.
Dr. Joseph Harkavy, New York, Tobacco Skin Reactions and Their Clinical Significance.
Dr. Leon Goldman, Cincinnati, Effect of Fever Artificially Induced on the Skin Sensitivity of Guinea Pigs to Turpentine.
Dr. Stephen Rothman, Julius M. Coon, Ph.D., and Mrs. Harriet Stenn, Chicago, Studies on Acetylcholine in Patients with Skin Diseases.
Drs. George P. Vryonis and Hugh J. Morgan, Nashville, The Number of Treponema Pallidum in the Superficial Lesions of Human Syphilis.
Dr. Joseph M. Thuringer, Oklahoma City, Mitotic Index of Palmar and Plantar Epidermis in Response to Stimulation.
Drs. Charles W. Barnett and George V. Kulchar, San Francisco, Experimental Studies on the Salivary Transmission of Syphilis.
Dr. P. Arthur Delaney, Chicago, Modern Technical Methods in Cutaneous Histopathology.
Zola K. Cooper, Ph.D., St. Louis, Mitotic Rhythm in Human Epidermis.
Dr. Lester W. Kimberly, Iowa City, Blood Plasma Bromide Levels in Bromoderma.
Dr. Camille Kereszturi, New York, Primary Tuberculosis of the Skin.

Eye, Ear, Nose and Throat Session.—The forty-fifth annual meeting of the American Laryngological, Rhinological and Otological Society will be held at the Drake Hotel, Chicago, May 9-11, under the presidency of Dr. Harold I. Lillie, Rochester, Minn. A symposium on care of the patient following operations for sepsis of otitic origin will open the scientific session with Drs. William E. Grove, Milwaukee, Jacob Marion Sutherland, Detroit, and Thomas C. Galloway, Evanston, Ill., as the speakers. One session will be devoted to the care of mastoid wounds:

Dr. Marvin F. Jones, New York, Following the Complete Mastoid Operation, Sinus Thrombosis and Operations on the Petrous Pyramid.
Dr. James Morrisset Smith, New York, Following the Radical Mastoid Operation of the Modified and Standard Types.
Dr. Harold G. Tobey, Boston, Following Operations on Abscess of the Brain.

Speakers in a symposium on final results in operations for chronic suppurative paranasal sinusitis will include:

Dr. Bert E. Hempstead, Rochester, Minn., End Results in Intranasal Operations for Maxillary Sinusitis.
Dr. Ebenezer Ross Faulkner, New York, End Results of Intranasal Operations on the Ethmoid, Frontal and Sphenoid Sinuses.
Dr. Samuel Salinger, Chicago, End Results in External Operations on the Maxillary Sinus.
Dr. Millard F. Arbuckle, St. Louis, End Results in External Operations on the Frontal, Ethmoid and Sphenoid Sinuses.

A symposium on voice defects will include the following:

Dr. James S. Greene, New York, Vocal and Verbal Syndromes: Their Rhinolaryngologic Significance.
Dr. Irving Wilson Voorhees, New York, Voice Defects as Related to Hearing Defects.
Dr. Chevalier L. Jackson, Philadelphia, The Voice After Direct Laryngoscopic Operations, Laryngofissure and Laryngectomy.

Dr. Lyman G. Richards, Boston, will also address the meeting on "Cuts and Captions: Five Editorial Years in Retrospect."

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 1, 1939.

A Complete War Time Plan of Hospital Organization

In the great war the principal hospitals of the country were extensively used for the treatment of wounded soldiers. If another European war occurs they will be put to a quite different use. The bombing from the air of crowded cities has made the position of these hospitals dangerous. They will be used as casualty clearing stations for the immediate treatment of numerous civilian casualties which are expected, and the seriously wounded who cannot be discharged will be removed to base hospitals in safer localities. Plans for this purpose have now been worked out in the greatest detail. Thus London has been divided into ten sectors. These contain the great teaching and large municipal hospitals which have the personnel and equipment for dealing with casualties on a large scale. Other hospitals and institutions have adequate accommodation and can be cleared of their normal patients and upgraded to the status of casualty hospitals in time of emergency. From these the injured would be transferred as soon as possible to affiliated casualty base hospitals in outer areas.

FIRST AID POSTS AND MOBILE UNITS

First aid posts are to be established wherever possible and supplemented by mobile units consisting of vehicles carrying equipment and medical personnel. Each unit is to consist of an automobile 8 feet 6 inches long, 5 feet wide and 6 feet high, fitted with cupboards packed with medical and surgical material. A physician and a nurse will travel in this and auxiliary personnel will follow in a car. One physician at least is to attend at every first aid post. An annual fee is to be paid in peace time to physicians in charge of first aid posts in consideration of their supervising the collective training of the auxiliary personnel assigned to the post. In London the land ambulance service will be supplemented by a river service on the Thames from its estuary up to Teddington.

Surgery in Diabetes

In a discussion at the Royal Society of Medicine Dr. H. P. Himsworth said that surgery in diabetes depended on whether the patient could be sent to the operating room with his diabetes balanced. If not, the surgical technic might have to be modified. Knowledge of the blood sugar level was of little value, for it was not correlated with the clinical state. All the necessary information could be obtained from a series of specimens of the urine. The most important chemical sign was ketonuria, for it showed that the diabetes was grossly out of control and the patient not fit for operation. When time was available the preparation of the patient with uncontrolled diabetes differed from the routine balancing in only one respect: he must receive an adequate amount of food from the onset—at least 1,800 calories and from 180 to 200 Gm. of carbohydrate. The dose of insulin should be raised until ketonuria was completely abolished and glycosuria reduced to a minimum. Protamine zinc insulin should not be used unless a long time was available for observation.

For minor operations under local anesthesia with evipal or with tribromethanol in amylene hydrate no special measures were necessary, but a major operation under a volatile anesthetic required special preparation. The meal and insulin next before the operation should be omitted, but two or three hours before 50 Gm. of sugar in lemonade should be given and, as the patient was put on the trolley, 35 units of insulin subcutaneously. If he was on protamine zinc insulin and the operation was fixed for the morning, the same preparation should be given without breakfast or protamine zinc insulin. If the operation was in the afternoon he should receive the usual dose of protamine zinc insulin and luncheon should be omitted, but three hours before operation 30 Gm. of sugar should be given and 10 units of insulin as he went to the operating room. Ether produced vomiting, which by interfering with the intake of food might complicate treatment, and chloroform was condemned by authorities. Postoperative dehydration must be avoided and diabetic ketosis averted, the former by administration of dextrose saline solution and water, the latter by administration of insulin. After the operation a patient who could take food by mouth was given sweet lemonade. Every specimen of urine was tested, if there were no ketones, by Benedict's solution; if the precipitate was red the patient should have 20 units of insulin; if yellow, 50; if green, 10. But if there was no precipitate, no insulin. If ketonuria was present, more carbohydrate should be given and 25 units of insulin for each 50 Gm. of sugar. If the patient could not take sugar by mouth during the first twelve hours he should have insulin according to the color schedule. Ketosis should be combated by intravenous dextrose and saline solution, one pint an hour for two or three hours, and, for every 50 Gm., of dextrose, from 30 to 50 units of insulin should be given according to the severity of the ketosis. If after twelve hours dextrose could still not be given by mouth, more dextrose and saline solution should be injected intravenously with 25 units of insulin.

The state of ketonuria determined whether an emergency operation could be undertaken at once. It was usually possible to wait six hours. If much ketosis was still present, 10 per cent dextrose solution could be infused during the operation and afterward until the ketosis disappeared. If during preparation severe glycosuria developed and ketonuria appeared, sepsis was probably present and operation must not be delayed.

James Risien Russell

The death at the age of 75 of James Risien Russell has removed a great neurologist and great teacher. He graduated at Edinburgh in 1886 and took the gold medal at his M.D. examination. He came to London for postgraduate study at St. Thomas's Hospital and after further study at Berlin and Paris became resident medical officer at the National Hospital, Queen Square, the home of British Neurology, then at its zenith. On its staff was a galaxy consisting of Hughlings Jackson, Ferrier, Gowers, Horsley, Beevor and Bastian. Russell was in turn appointed registrar, pathologist, assistant physician and physician. By a succession of original papers published from 1890 to 1900 and his skill as a clinician and teacher, he achieved a standing beside these great British neurologists. These papers included experimental studies on the functions of the cerebellum, its afferent and efferent pathways, the constitution of the brachial and lumbosacral plexuses and the effects of various lesions of the central nervous system on the knee jerk. With James Taylor he made a critical study of the suspension treatment of tabes dorsalis. In 1900 he published with Batten and Collier a classic paper on the disease they termed "subacute combined degeneration of the spinal cord." He pointed out that cerebellar ataxia is a feature of voluntary as opposed to reflex movements. His command of language and clinical acumen attracted crowds to his clinics. It was said of him by the students that he knew all that the other neurologists knew and had something of his own in addition. He was a president of the Neurological Section of the Royal Society of Medicine, corresponding member of the Société de neurologie of Paris and honorary member of the Canadian Medical Association. He contributed many papers to the medical journals and neurologic chapters to Allbutt's System of Medicine, the Encyclopaedia Medica, Quain's Dictionary of Medicine and Gibson's Textbook of Medicine.

PARIS

(From Our Regular Correspondent)

March 25, 1939.

Clinical Versus Biologic Cure of the Avitaminoses

At the February 28 meeting of the Académie de médecine of Paris, Drs. Georges Mouriquand and Jacques Rollet called attention to the necessity of making a distinction between relief of symptoms due to an A or C avitaminosis and cure of the underlying tissue changes which result from such avitaminoses. By the latter is meant the loss of sensibilization to a recurrence of the particular avitaminosis. Guinea pigs which have been subjected to a C avitaminosis diet present typical scorbutic lesions as early as the fifteenth day, which increase in severity from that period onward. If the animals are given a strong dose of ascorbic acid toward the twentieth day, all the clinical evidences of the avitaminosis recede rapidly in a few days. From ten to thirty days after apparent cure, no typical scorbutic lesions can be found at necropsy. If the surviving apparently cured animals are again placed on a C avitaminosis diet and other guinea pigs, to be used as controls, are given the same diet, the apparently cured animals show scorbutic lesions between the third and sixth days, whereas the controls present only the typical lesions from the fifteenth day onward. Only after a long period of treatment with ascorbic acid do the animals which show early evidence of recurrence appear to be cured again. This period varies from sixty to eighty days. This persistence of the lesions of C avitaminosis and sensitization in the animals subjected to a second C avitaminosis diet after apparent cure coincides with the persistence of a certain fibrillary condition of the medulla of the bones, and this disappears only when complete neutralization is obtained. Similar results were obtained in rats subjected to A avitaminosis. After use of an A avitaminosis diet, there appears a typical xerophthalmia, which recedes rapidly after carotene is given. If, however, the A avitaminosis diet is given again, the xerophthalmia reappears in ten or fifteen days, whereas in the control animals, which have been given the A avitaminosis diet for the first time, the xerophthalmia appears at about the thirtieth day.

These experimental observations indicate that the apparent clinical cure of patients suffering from A or C avitaminosis is not a real cure. Complete cure depends on the disappearance of sensibility on the part of the tissues. This necessitates a prolonged cure in order to prevent recurrence of symptoms and bring about a state of biologic "neutrality."

Serotherapy of Appendicitis and Perforative Peritonitis

Prof. M. Weinberg of the Pasteur Institute read a paper at the Nov. 29, 1938, meeting of the Académie de médecine in which he warmly recommended the use of an antigangrene and anticolibacillus serum in all cases of acute appendicitis, especially if complicated by peritonitis. This treatment has encountered strong opposition on the part of some of the leading surgeons in Paris because it might encourage the practitioner to await the outcome of the injection of the serum and consequently result in an increased mortality as compared with that of immediate operation in all cases of acute appendicitis. At the February 21, 1939, meeting of the same society, Professor Weinberg answered the criticisms of those who were opposed to such preoperative serotherapy. He stated that he wished to be understood as being in favor of operation in all cases at some period. For patients who were far away from hospitals, for example on islands, in the colonies or on ships at sea, serotherapy was distinctly indicated. In addition, many surgeons preferred to postpone operation, if possible, until an acute attack had subsided. Their patients would be distinctly benefited by preoperative serotherapy directed toward combating the bacteria most commonly found in appendicitis and appendicular peritonitis. In ten cases studied bacteriologically, the defensive powers of the patient were distinctly increased as a result of serotherapy. Even in cases of immediate operation, serotherapy is indicated in the interval preceding the operation.

In the discussion, Prof. H. Vincent stated that Bacillus perfringens was rarely found in cases of appendicitis and even when present did not appear to have any marked pathogenic properties as compared with Bacillus coli. If certain surgeons, as Dr. Weinberg claimed, had observed a lower mortality rate following the use of a polyvalent antigangrene and an anticolibacillus serum, the reason for this improvement was not the action of these specific serums. It must be remembered that ordinary horse serum contains a variable quantity of antibodies which act on a large number of bacteria, especially B. perfringens, B. coli and Streptococcus faecalis (enterococcus). But Dr. Vincent supported the contention of Dr. Weinberg that serums which had a specific action on these three groups of bacteria should be used because there were cases in which horse serum alone did not contain sufficient antibodies to combat the toxins of B. perfringens, B. coli and Streptococcus faecalis.

Fiftieth Anniversary of Pasteur Institute of Paris

The Academy of Science started a subscription in 1888 to erect suitable buildings to house the work of Pasteur and his associates. The Pasteur Institute was opened Nov. 14, 1888, and plans had been made to celebrate its fiftieth anniversary last fall. Owing, however, to the disturbed condition of international affairs, the celebration was postponed to March 15 of this year. In the presence of President Lebrun and of Minister of Public Health Rucart, papers were read by Prof. Louis Martin, director of the Pasteur Institute, by Prof. Gaston Ramon of the branch institute at Garches in one of the Paris suburbs, and by the grandson of Louis Pasteur, Prof. Pasteur Vallery-Radot.

Following the reading of these three papers, a gold medal was awarded Dr. Harry Plotz of New York, at present head of one of the laboratories of the Pasteur Institute, for his research work on the virus of various infectious diseases. A gold medal was also awarded Dr. A. Saenz, now of Uruguay, for his work on the bacteriology of tuberculosis. Prof. Louis Martin in his paper reviewed the life of Pasteur, in calling attention to the opposition which he encountered to his pioneer work in bacteriology. The first course in March 1889 was given at the institute by one of Pasteur's assistants, Professor Roux, whose research on diphtheria made his name almost as well known in the scientific world as that of Pasteur. During recent years the activities of the institute have been especially directed toward the study of the viruses of diseases affecting both animals and man.

Professor Ramon first reviewed the work of Roux and Yersin, who discovered the toxin of diphtheria in 1888 and then found a serum which would neutralize this toxin. In the effort to prevent diphtheria, a series of investigations was begun in 1923 by Professor Ramon at the branch Pasteur Institute in one of the suburbs of Paris. The results of fifteen years of application of this method of vaccination against diphtheria by the use of the toxoid was described in the January 21 Paris letter (THE JOURNAL, February 25, p. 758). In addition to vaccination against diphtheria, the branch Pasteur Institute under the direction of Professor Ramon has investigated the question of vaccination against tetanus. Both of these toxoids are now employed extensively in the French army.

Prof. Pasteur Vallery-Radot described the organization of branches of the Pasteur Institute in nearly all the French colonies. The first of these was erected in Tunis in 1893 and a little later one was opened in Algiers. Since then, branches

in Morocco, Madagascar, Indo-China and French West Africa have been organized. Important contributions to our knowledge of various tropical diseases have been published, so that the result of the work of these branch institutes has been a marked reduction in the incidence and mortality of tropical diseases in the French colonies.

BERLIN

(From Our Regular Correspondent)

March 13, 1939.

Infectious Diseases During 1938

Twenty-two infectious diseases are compulsorily reportable under the new law. The promptitude with which most cases are reported to the health officers has made possible the early release of rather complete statistics for the year 1938.

Diphtheria again occupied first place among infectious diseases, as it has done for many years; 149,424 cases were reported. Despite the intensive antidiphtheria campaign the disease has yet to lose its epidemic character. Since children are chiefly affected, diphtheria also ranks as the most prevalent of any disease of childhood. Second to diphtheria was scarlatina, with 114,423 cases. Unlike diphtheria, scarlatina had decreased by several thousand cases as compared with 1937. Fewer new cases of tuberculosis of the lungs were reported than in the previous year (60,420 cases in 1938, 63,570 in 1937). The authors of the report emphasized, however, that a general decline in tuberculosis should not be assumed.

In contrast to the foregoing three principal infectious diseases the others appear numerically insignificant, yet if the seriousness of these less common diseases is considered their importance becomes manifest. Lupus remained virtually unchanged, 1,039 cases against 1,042 in the year 1937. On the contrary, several hundred more cases of encephalitis were reported than in 1937, bringing the total to 1,826. New cases of other infectious diseases were reported as follows: meningitis 287, poliomyelitis 5,757, typhoid 2,945, paratyphoid 3,210, dysentery 5,265, puerperal fever 2,991, febrile abortion 2,862, bite wounds inflicted by rabid animals 112, anthrax eighty-four, psittacosis thirty-seven, trichinosis twenty, malaria 365 (malaria has been compulsorily reportable since January 1), leprosy one case, in the port of Hamburg. The 1938 report mentions no cases of cholera, typhus, yellow fever, plague, variola, relapsing fever or glanders. All the foregoing have to do only with new cases. No statistics from Austria and the Sudetenland are included.

The mortality from the various disorders reflects their relative severity. In 1938 tuberculosis of the lungs caused the greatest number of deaths, 30,623. This figure is equal to numerically more than half the number of newly reported cases of the same disease. One could scarcely adduce better statistical evidence of the peril of tuberculosis than these proportional figures. In 1937, 33,236 persons died of pulmonary tuberculosis. (The tuberculosis deaths occurring in 1938 do not, of course, represent cases newly reported in that year but cases from the aggregate of tuberculous persons.) Conversely, despite the high morbidity of diphtheria there were only 5,286 deaths from that disease. This figure is even smaller than that for the year 1937, although more cases were reported in 1938. This decline in fatalities was probably due to improved treatment and diminished severity of diphtheria. Even smaller was the scarlatina mortality, 759 deaths in 114,243 cases. Among 1,826 cases of lethargic encephalitis there were 842 deaths, most of the victims being children; among 287 cases of meningitis there were 160 deaths; among 5,757 cases of typhoid, 338 deaths. Other fatalities included paratyphoid 126 deaths, dysentery 161 deaths, puerperal fever 548 deaths, febrile abortion 344 deaths, bite wounds twelve deaths, psittacosis six deaths. In general, with the exception of encephalitis, poliomyelitis, typhoid, paratyphoid and anthrax a recession in the number of fatal cases of infectious disease took place during 1938.

The "House of Health"

The national chamber of physicians in collaboration with various other officials has established a hospital on the shores of the Starnberger See near Munich, which is considered a model for all German hospitals of the future. This institution has been equipped along the lines of "new German medicine" as practiced at the Rudolf Hess Hospital, Dresden. The layout includes common dining halls, a promenade adjoining the baths, bordered by outdoor bathing pools in the kneippist tradition, lounging halls for summer and winter treatment and a spacious gymnasium. The building is surrounded by a huge park in which are facilities for individual physical exercise and for games, including a sort of common recreation area for men and women. The *raison d'être* of all these innovations is, as officially stated, a physical and mental rehabilitation of the patients, to supplement the usual hospital care. The new system will above all be directed to prevention of "diseases of civilization." The following considerations motivated foundation of the new institution: Hospital routines have heretofore been based too exclusively on the care of the patient. This has tended to make a patient "soft" and easily susceptible to psychic disturbances. Accordingly, the new establishment attempts a comprehensive program of rehabilitation which looks beyond the mere curative goal and which is designed to awaken and strengthen against the future the natural forces of resistance both physical and mental. Hence for this institution "for the cure and prevention of sickness" the name "house of health" (gesundungshaus) has been selected as more appropriate than the usual term "hospital" (krankenhaus).

ITALY

(From Our Regular Correspondent)

Feb. 28, 1939.

National Congress of Pediatricians

The Società Italiana di Pediatria recently held its sixteenth national congress at the University of Genoa.

The first topic was "Meningitis with Clear Cerebrospinal Fluid in Children." Tuberculous meningitis was excluded. Professor Taccone said that meningitis with clear cerebrospinal fluid may be primary or secondary and of bacterial or nonbacterial origin. Meningitis from a neurotropic virus and of physical, chemical or unknown origin is primary nonbacterial meningitis. The forms which develop in the course of bacterial infections from the direct or indirect action of bacteria are secondary bacterial forms, whereas those which complicate nonbacterial infections (such as so-called sympathetic meningitis and those from exogenic intoxication, anaphylaxis and the like) are secondary nonbacterial forms. Primary serous meningitis with clear cerebrospinal fluid is benign. Clinical meningeal symptoms with more or less transient and extensive paralysis are frequently caused by poliomyelitis. Meningitis from epidemic encephalitis is rare. In latent tuberculous meningitis, meningeal symptoms do not develop. The cerebrospinal fluid shows neither chemical nor cytologic changes, but it contains tubercle bacilli. In the course of benign lymphocytic acute meningitis the cerebrospinal fluid is altered. The speaker disapproved of the tendency to diagnose benign lymphocytic meningitis in the case of meningeal reactions with cerebrospinal fluid changes from which the patient recovers. The condition may be a reaction to various diseases, especially in relation to seasonal influences. The existence of a virus for benign lymphocytic meningitis has not been proved, and the autonomy of the form is as yet hypothetic. In meningitis with clear cerebrospinal fluid there are albuminosis and lymphocytosis of the cerebrospinal fluid.

Professor De Simone, the second speaker, said that secondary meningitis, bacterial or nonbacterial, may develop in the course of or at the end of certain diseases. Probably this form represents special humoral reactions of the patient or a diminished virulence of bacteria in the given infection. There are several forms of meningococcic meningitis. In the fulminant form the cerebrospinal fluid may be slightly altered because of the rapidly fatal evolution. Some forms of meningitis, including benign lymphocytic meningitis, may be due to an attenuated meningococcic infection. Other forms of secondary bacterial meningitis are those from icterohemorrhagic spirochetosis and from syphilis. The latter may develop with secondary syphilis or after administration of insufficient treatment. The speaker discussed also meningitis from trauma, sun stroke, heat stroke, simple lumbar puncture, introduction of foreign substances into the spinal canal and local anaphylactic reactions. Frequently the symptoms are not proportional to the changes in the cerebrospinal fluid.

NUTRITIONAL DISEASES IN INFANTS

The second topic was "Acute Nutritional Diseases in Infants." Professor Barberi discussed the etiology and pathogenesis of diseases of the digestive tract in infants. Infection is an important factor. Constitution plays a part because of the individual needs and assimilation by infants of certain constituents of food. Exudative diatheses are predisposing factors in the development of gastrointestinal disturbances. The climatic and meteorologic changes of summer also have a role. The administration of colloids or of acidified milk, a diet without any milk, diminution of the intake of milk and administration of greens, fruits and vitamins are of value in preventing acute nutritional disturbances in infants. Milk used in the treatment of nutritional diseases in nurslings must contain a reduced amount of fat, modified casein and a sufficient amount of carbohydrates to compensate for the deficiency of fats and to control intestinal putrefaction.

Professor Moggi pointed out the importance of breast feeding in the prevention of nutritional diseases in nurslings and the advisability of establishing a nursery room in industrial centers in order that working mothers may feed their infants. Placing infants in the homes of nurses does not give satisfactory results. It is advisable to establish periodic consultations with nurses who conduct nurslings' homes and to have legal control of them. The education of mothers about the health of infants is important, especially in the care of nutritional diseases. The courses on puericulture for mothers given every year by the Opera Nazionale per la Maternità e Infanzia and the courses in specialized pediatrics for municipal physicians given by the ministry of internal affairs have given satisfactory results.

A special session of the congress was devoted to the care of illegitimate children. The next congress will meet in Rome.

Annual Congress on Urology

The Società italiana di Urologia recently held its seventeenth national congress in Rome.

Dr. Oberholtzer of Rome spoke on the first topic, "Hormones in the Treatment of Hypertrophy of the Prostate." Theoretically two different male hormones are formed by the testicular interstitial cells. Some authors say that the testicle contains cells which produce estrogen, which exists in the normal urine of man. These substances have an effect on the size and structure of the prostate. Those from Sertoli's cells prevent hypertrophy, whereas those from the interstitial cells stimulate it. Estrogen may induce fibro-adenomatous degeneration of the posterior lobes of the prostate. Variations in the volume and structure of the prostate begin when the equilibrium between these substances, especially between androgen and estrogen, is destroyed. In the literature are reports of more than 1,000 cases of endocrine treatment of hypertrophy of the prostate. The speaker reported results in a group of 150 patients, of whom 112 were treated with androgen. The remaining patients had either estrogen or a combined treatment of androgen and estrogen. The speaker believes that glandular disturbances are the most plausible cause of prostatic hypertrophy. The treatment with androgen gives satisfactory results in many cases. The general condition of the patient and the renal functions improve, and the vesical residue diminishes or disappears completely. The treatment is valuable after intra-urethral resection to prevent recurrence. It is harmless, has no contraindications and does not interfere with the results of prostatectomy if indicated. Prostatectomy is followed by rapid recovery in patients who have had the endocrine treatment and complications are rare. Such treatment may stop the evolution of prostatic hypertrophy but does not diminish the size of the adenoma.

TRANSPLANTATION OF URETERS

The second topic, "Transplantation of Ureters," was divided into two subtopics. Professor Chiandano discussed "Ureteral Anastomoses and Ureteral Transplantations." He reviewed the operations used in performing uretero-ureteral anastomoses and in transplanting the ureters to the bladder and intestine. The end to end circular suture (Schopf's technic) is the simplest method for ureteral anastomoses. Transplantation of a ureter to the other one has not met with general approval. Cystoneostomy, or transplanting to the bladder the distal end of the ureter, does not give satisfactory results. Anastomosing a ureteral end which is provided with flaps aims to prevent stenosis at the contacting area. The technic is ingenious and stenosis does not follow. However, the best results are obtained from invagination by traction of the bladder with special instruments introduced into the bladder. Implantation of the ureter to the intestine has many advocates. The operation imitates normal conditions more closely than other operations do.

Professor Chiatellino discussed the results of experimental transplantation of the ureters in structures of the urinary tract or in the intestine. He reviewed the literature and concluded that the immediate results of ureteral transplantation have been improved by the advances in technic. Many technical refinements have been resorted to, but the results of the operation depend not only on the technic but on other factors. In further work on the subject it is advisable to take into account the part taken by physiopathologic factors in the evolution of transplanted ureters. After the presentations by the speakers and after the discussions, several other articles were read and discussed.

Marriages

MARION B. O'KELLEY, Leesburg, Fla., to Miss Barbara Davis Hoffman of Washington, D. C., Nov. 4, 1938.

ROBERT BRUCE LOGUE, Atlanta, to Miss Carolyne Frances Clements of Buena Vista in November 1938.

EDWARD CAFFRON KLEIN JR., Newark, N. J., to Miss Regina Shanley of South Orange, February 11.

RAYMOND F. SHEETS, Carthage, Ill., to Mrs. Elva McCallister in Keokuk, Iowa, February 20.

RUSSELL I. WILLIAMS, Creston, Iowa to Miss Carleen Steckelberg of Lincoln, Neb., February 25.

HAROLD WILLIAM SCHOON, Sibley, Iowa, to Miss Viola Ross of Doon in Spirit Lake, February 11.

HERMAN FRANK OPPLEMAN to Miss Gwendolyn Ann Lewis, both of Richmond, Va., January 7.

DEAN WRIGHT SMITH to Miss Dorothy C. Clark, both of Jackson, Mich., February 18.

VIRGIL O. LA FLEUR, Lorain, Ohio, to Miss Gertrude Russell of Chicago, Nov. 10, 1938.

ROSS M. ZELLER to Miss Shirley Burroughs, both of Greenville, Ohio, in January.

Deaths

Henry Schmitz ✠ Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1897; American College of Medicine and Surgery, Chicago, 1906; professor and head of the department of obstetrics and gynecology, Loyola University School of Medicine; past president of the Chicago Gynecological Society; member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Central Association of Obstetricians and Gynecologists, Radiological Society of North America, American College of Radiology and the American Radium Society; fellow of the American College of Surgeons; in 1930 received the gold medal of the Radiological Society of North America for achievement in the science of radiology in its application to diseases of women; in 1938 delivered the Janeway Lecture at the annual meeting of the American Radium Society, at which time he was presented with the Janeway Medal; head of the radiation therapy department and attending gynecologist, Mercy Hospital; attending gynecologist to the Cook County Hospital; consulting gynecologist to the Misericordia and Holy Cross hospitals since 1925; director of Cancer Research Institute of Chicago since 1928; secretary, board of trustees, Lewis Memorial Maternity Hospital since 1931; author of "Manual of Diseases of Women," 1912; "Handbook of Gynecology," 1915; "The Physics and Biological Principles of Radiation Therapy," 1922; contributed a chapter on "Radiology" in Davis's Gynecology and Obstetrics, 1934; aged 67; died, April 17, of lobar pneumonia.

Allen Deming Lazenby ✠ Baltimore; University of Maryland School of Medicine and College of Physicians and Surgeons, 1916; one of the original members of the Council on Industrial Health of the American Medical Association; was a captain in the M. C., U. S. Army, in 1917 and retired from active duty in 1919 for disability incident to the service; served during the World War; fellow of the American College of Surgeons and the Association of Industrial Physicians and Surgeons; chairman of the Industrial Health Committee of the Medical and Chirurgical Faculty of Maryland; a member of the Medical Committee of the New York World's Fair; a director of the Baltimore Chapter of the American Red Cross; vice president and medical director of the Maryland Casualty Company; aged 45; died, April 18, of cardiovascular renal disease.

Robert Alexander Peterson ✠ Riverside, Calif.; State University of Iowa College of Medicine, Iowa City, 1918; an Associate Fellow of the American Medical Association; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; formerly a medical missionary under the Board of Missions of the Methodist Episcopal Church, stationed at Chengtu, Szechwan, China, where he was professor of otolaryngology and associate in ophthalmology, West China Union University; director of Chengtu Eye, Ear, Nose and Throat Hospital and consulting otolaryngologist to the Hospital for Men and Hospital for Women and Children; aged 46; died, January 27.

Angenette Parry ✠ Huntington, N. Y.; Woman's Medical College of the New York Infirmary for Women and Children, 1891; past president of the Medical Women's National Association; member of the executive board of the American Women's Hospitals; was decorated by the Greek government in recognition of service rendered sick and destitute refugees at the American Women's Hospitals, Kokinia, Piraeus, Greece; fellow of the American College of Surgeons; aged 81; volunteer worker in the social service department, Massachusetts General Hospital, Boston, where she died, March 1, of cerebral hemorrhage.

James Morsell Gassaway ✠ Senior Surgeon, U. S. Public Health Service, Cairo, Ill.; Columbian College Medical Department, Washington, D. C., 1872; Jefferson Medical College of Philadelphia, 1882; in 1876 was commissioned assistant surgeon in what was then known as the United States Marine Hospital Service; rose through the various positions to that of senior surgeon, which appointment he received in 1912; retired in 1917; past president of the Alexander County Medical Society; aged 91; died, March 5, of chronic myocarditis and cerebral arteriosclerosis.

Thomas Leo Houlton, Omaha; Creighton University School of Medicine, Omaha, 1920; assistant professor of neurology at his alma mater; member of the American Psychiatric Association; on the staffs of the Douglas County Hospital, St. Joseph's Hospital and St. Catherine's Hospital; aged 44; was found dead in his garage, February 1, of accidental carbon monoxide poisoning due to the exhaust from an automobile.

Charles Butterfield Rogers, Columbus, Ohio; Miami Medical College, Cincinnati, 1897; member of the American Psychiatric Association; formerly medical director of the Orchard Springs Sanatorium, Dayton; at one time chief, bureau of examination and classification, Ohio State Welfare Department; aged 65; died, January 27, in the White Cross Hospital of heart disease.

Alfred Frederick William Sferra ✠ Bound Brook, N. J.; St. Louis University School of Medicine, 1929; past president and secretary of the Somerset County Medical Society; formerly county coroner; on the staffs of St. Peter's Hospital, New Brunswick, Somerset Hospital, Somerville, and Muhlenberg Hospital, Plainfield; aged 45; died, January 1, of coronary thrombosis.

Walden Evermont Muns, Birmingham, Ala.; University and Bellevue Hospital Medical College, New York, 1914; formerly assistant professor of clinical medicine, New York Post-Graduate Medical School, Columbia University, New York; aged 54; died, January 31, in the Veterans Administration Facility, Tuscaloosa, of arteriosclerosis, hypertension, nephritis and uremia.

Ernst Freund, Los Angeles; Medizinische Fakultät der Universität Wien, Austria, 1926; associate professor of orthopedics, College of Medical Evangelists; member of the American Academy of Orthopedic Surgeons; fellow of the American College of Surgeons; on the staffs of the Cedars of Lebanon Hospital and White Memorial Hospital; aged 36; died, Dec. 12, 1938.

Arthur Lemuel Kennedy, Denver; Harvard University Medical School, Boston, 1901; member of the Colorado State Medical Society; assistant professor of clinical medicine and therapeutics, University of Colorado School of Medicine, 1905-1907, and assistant professor of medicine, 1907-1910; aged 72; died, January 4, in La Jolla, Calif., of bronchopneumonia.

Harris Dana Newkirk ✠ Anaheim, Calif.; University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis, 1903; fellow of American College of Surgeons; served during the World War; on the staffs of the Orange County Hospital and St. Joseph Hospital, Orange, and Fullerton (Calif.) Hospital; aged 60; died, Dec. 31, 1938.

James Otho Parramore, Crown Point, Ind.; Medical College of Virginia, Richmond, 1914; member of the Indiana State Medical Association; served during the World War; fellow of the American College of Physicians; medical director and superintendent of the Lake County Tuberculosis Sanatorium; aged 49; died, January 24, of brain tumor.

Lawrence Lloyd Purifoy ✠ El Dorado, Ark.; Memphis (Tenn.) Hospital Medical College, 1903; Tulane University of Louisiana School of Medicine, New Orleans, 1913; fellow of the American College of Surgeons; chief of surgical staff, Henry C. Rosamond Hospital; aged 56; died, January 7, of injuries received in an automobile accident.

Washington Price Timmerman, Batesburg, S. C.; Medical College of the State of South Carolina, Charleston, 1891; member and past president of the South Carolina Medical Association; at one time mayor and member of the board of trustees of the schools of Batesburg; aged 69; died, Dec. 24, 1938, in a hospital at Columbia.

Alexander Scanlin Ross ✠ Camden, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1900; fellow of the American College of Surgeons; surgeon to the Cooper Hospital and the Zurbrugg Memorial Hospital, Riverside; aged 62; died, January 11, of myocardial insufficiency and lobar pneumonia.

Stanley E. Bryant, Dowagiac, Mich.; Michigan College of Medicine and Surgery, Detroit, 1905; member of the Michigan State Medical Society; county coroner; at various times city health officer and member of the city board of health; aged 66; on the staff of the Lee Memorial Hospital, where he died, Dec. 28, 1938.

Archibald A. McLaurin, Pierre, S. D.; Rush Medical College, Chicago, 1911; member of the South Dakota State Medical Association and the Radiological Society of North America; on the staff of the Pierre Indian School Hospital; aged 62; died, January 5, of myxosarcoma testis with metastases.

William E. A. Forde, Nashville, Tenn.; Meharry Medical College, Nashville, Tenn., 1914; professor of otolaryngology at his alma mater; on the attending staff of the George W. Hubbard Hospital, where he was in charge of the otolaryngology service; aged 54; was shot and killed by a student in January.

William Alger Shaw ✠ Reno, Nev.; Jefferson Medical College of Philadelphia, 1911; member of the American Academy of Pediatrics; served during the World War; on the staffs

of St. Mary's and Washoe General hospitals; aged 50; was found dead, January 20, of a self-inflicted bullet wound.

Daniel Louis Scanlan ✠ Volga, S. D.; Minneapolis College of Physicians and Surgeons, 1899; past president of the South Dakota State Medical Association; medical superintendent of the Volga Hospital; fellow of the American College of Surgeons; aged 66; died in March of cerebral hemorrhage.

Russell Wesley Raynor ✠ Pikeville, Ky.; University of Maryland School of Medicine, Baltimore, 1908; formerly acting assistant surgeon in the U. S. Public Health Service; on the staffs of the Beaver Valley Hospital, Martin, and the Methodist Hospital; aged 52; died, January 20, of pneumonia.

Peter Leo McKallagat, Lawrence, Mass.; Columbia University College of Physicians and Surgeons, 1906; member of the Massachusetts Medical Society; formerly city physician, and member of the board of health; aged 55; died, January 19, in Miami Beach, Fla., of coronary occlusion.

John Monroe McSparin, Carriers Mills, Ill.; Loyola University School of Medicine, Chicago, 1916; served during the World War; for many years member of the board of education; aged 49; died, January 7, of chronic myocarditis, nephritis, hypertension and pulmonary tuberculosis.

George C. Nix, Opp, Ala.; University of Texas School of Medicine, Galveston, 1904; member of the Medical Association of the State of Alabama; at one time member of the board of education; formerly county health officer and postmaster; aged 60; died in January of pneumonia.

Theophilus E. Hinshaw, Winfield, Kan.; Missouri Medical College, St. Louis, 1882; member of the Kansas Medical Society; on the staff of the State Training School; trustee of the Southwestern College for many years; aged 80; died, Dec. 23, 1938, in St. Mary's Hospital.

Claude Murphy Scarborough ✠ Chicago Heights, Ill.; Northwestern University Medical School, Chicago, 1926; aged 39; on the staffs of St. James Hospital, Chicago Heights and Ingalls Memorial Hospital, Harvey, where he died, January 18, of coronary thrombosis.

Jacob E. K. Morris ✠ Olean, N. Y.; University of Buffalo School of Medicine, 1879; fellow of the American College of Surgeons; aged 82; on the staff of the Olean General Hospital; died, January 23, of chronic nephritis, hypostatic pneumonia and streptococcic sore throat.

Edward Adams Romig, Newberg, Ore.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1877; veteran of the Spanish-American War; aged 86; died, January 26, in the Veterans Administration Facility, Portland, of cerebral hemorrhage.

William Harvey McLean ✠ Lexington, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1920; fellow of the American College of Surgeons; on the staff of the Good Samaritan Hospital; aged 45; died, January 13, of arteriosclerotic heart disease.

Michael Joseph Purcell ✠ Chicago; Chicago College of Medicine and Surgery, 1912; fellow of the American College of Surgeons; on the staffs of St. Joseph's Hospital and the John B. Murphy Hospital; aged 60; died, January 2, of arteriosclerotic heart disease.

Alvin Lebrun Nourse, Anniston, Ala.; Beach Medical Institute, Indianapolis, 1885; Gate City Medical College, Dallas, 1907; member of the Medical Association of the State of Alabama; died, January 12, of pneumonia following fracture of the hip received in a fall.

James Blaine Muncy ✠ Pennington Gap, Va.; Medical College of Virginia, Richmond, 1918; past president and secretary of the Lee County Medical Society; served during the World War; aged 45; died suddenly, January 20, of a self-inflicted wound.

Claude Bernard Calbreath, Hastings, Neb.; Keokuk (Iowa) Medical College, 1898; member of the Nebraska State Medical Association; served during the World War; aged 60; died, January 9, at the Mary Lanning Hospital of carcinoma of the esophagus.

Robert A. Hudson, Islandton, S. C.; Medical College of the State of South Carolina, Charleston, 1909; member of the South Carolina Medical Association; postmaster; aged 52; died, January 21, in the Charles Es-Dorn Hospital, Walterboro, of coronary thrombosis.

George Gill Mulherin, Brownsville, Tenn. (licensed in Tennessee in 1904); member of the Tennessee State Medical Association; aged 60; on the staff of the Haywood County Memorial Hospital, where he died, January 9, of influenza and pneumonia.

Heinrich F. W. Petersen, Dundee, Ill.; College of Physicians and Surgeons of Chicago, 1888; member of the Illinois State Medical Society; aged 84; died, January 30, in a hospital at Elgin of cerebral arteriosclerosis, myocarditis and bronchopneumonia.

Thaddeus Kosciusko Jones, Henrietta, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1898; served during the World War; for many years mayor; county health officer; aged 62; died, January 24, of myocarditis and toxic goiter.

Charles Epley Patterson, Fayette, Ohio; Starling Medical College, Columbus, 1896; member of the Ohio State Medical Association; at various times member of the village council, and mayor; aged 65; died, January 3, of coronary thrombosis.

Henry Kruse, Chicago; Loyola University School of Medicine, Chicago, 1916; member of the Illinois State Medical Society; aged 53; died suddenly, January 7, in the Roseland Community Hospital of cerebral hemorrhage and hypertension.

George Thomas Magraw, Avondale, Pa.; Jefferson Medical College of Philadelphia, 1897; member of the Medical Society of the State of Pennsylvania; served during the World War; aged 71; died, January 9, of cardiovascular renal disease.

William Porter Logue, Williamsport, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; member of the Medical Society of the State of Pennsylvania; aged 75; died, January 5, of chronic myocardial fibrosis.

Matthew Joseph Shields, Scranton, Pa.; University of the City of New York Medical Department, 1888; founder of the American Red Cross first aid work; served during the World War; aged 76; died, January 23, of chronic myocarditis.

Theodore Anthony Kreuser, Hines, Ill.; Rush Medical College, Chicago, 1897; member of the Illinois State Medical Society; aged 73; died, January 8, at the Veterans Administration Facility of arteriosclerosis and cardiac hypertrophy.

Andrew Pleasant Bush, Columbia, Tenn.; Jenner Medical College, Chicago, 1913; Kansas City (Mo.) College of Medicine and Surgery, 1920; aged 57; died, January 9, in the Baptist Hospital, Memphis, of myocardial insufficiency.

Freeda May Piles Clark, Chambers, Neb.; Hahnemann Medical College and Hospital, Chicago, 1899; aged 65; died, January 27, in the Nicholas Senn Hospital, Omaha, of gastric ulcer, carcinoma and postoperative pneumonia.

Marcus Claude Roberts ✠ Hutchinson, Kan.; Northwestern University Medical School, Chicago, 1906; on the staffs of the Grace Hospital and St. Elizabeth Mercy Hospital; aged 60; died, January 6, of coronary thrombosis.

John Adam Parker, Kansas City, Mo.; Hahnemann Medical College of the Kansas City University, Kansas City, Mo., 1902; Kansas City Hahnemann Medical College, 1906; aged 64; died, January 1, of heart disease.

Louis King, Chicago; St. Louis College of Physicians and Surgeons, 1900; member of the Illinois State Medical Society; aged 63; died, January 9, of hemopericardium, ruptured cardiac infarct and coronary sclerosis.

Raymond Erastus Gaston ✠ Cincinnati; Miami Medical College, Cincinnati, 1905; served during the World War; on the staffs of the Christ and St. Francis hospitals; aged 62; died, January 3, of myocarditis.

Henry P. Kohberger, Pittsburgh; University of Pennsylvania Department of Medicine, Philadelphia, 1902; aged 59; on the staff of St. Joseph's Hospital, where he died, January 3, of coronary thrombosis.

Richard Z. Query, Charlotte, N. C.; University College of Medicine, Richmond, 1907; aged 58; died, January 7, in the Presbyterian Hospital of cerebral hemorrhage and hypertensive cardiovascular disease.

Michael Ritter Miley, Beecher, Ill.; Rush Medical College, Chicago, 1896; member of the school board for many years; formerly mayor; aged 80; died in January of arteriosclerosis and heart disease.

Ernest Foucher, Montreal, Que., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1911; aged 52; died, January 11, of pneumonia.

Justus Sinexon, Philadelphia; Jefferson Medical College of Philadelphia, 1883; formerly on the staffs of the Charity, Jefferson and Presbyterian hospitals; aged 77; died, Dec. 27, 1938, of lobar pneumonia.

Frank Morris ✠ Lima, Ohio; Starling Medical College, Columbus, 1892; on the staffs of St. Rita's and Memorial hospitals; aged 70; died, January 25, of myocarditis, coronary disease and uremia.

Robert E. Fivey, Chicago; Albany (N. Y.) Medical College, 1887; medical director of the Globe Insurance Company; aged 73; died, March 11, in the Evangelical Deaconess Hospital.

William Edgar Robertson, Milton, Ont., Canada; University of Toronto Faculty of Medicine, 1900; formerly a medical missionary; aged 59; died, January 15, of heart disease.

William K. Nisbet ✦ Earlington, Ky.; University of Louisville (Ky.) Medical Department, 1888; served during the World War; aged 71; died, January 13, of carcinoma of the stomach.

George Ringel, Kansas City, Mo.; University Medical College of Kansas City, Mo., 1901; aged 58; died, January 3, in the Menorah Hospital, of coronary occlusion and arteriosclerosis.

James F. Lewis, Dupont, Ind.; Medical College of Ohio, Cincinnati, 1875; aged 82; died, January 4, of hypostatic pneumonia, hypertrophy of the prostate and epithelioma of the face.

Michael D. Kiely, Archer, Iowa; University of Edinburgh Faculty of Medicine, Scotland, 1885; formerly mayor; aged 78; died, January 9, in Sioux City of coronary disease.

Mark Edward Johnson, Corning, Iowa; Jefferson Medical College of Philadelphia, 1895; member of the Iowa State Medical Society; aged 77; died, January 9, of coronary occlusion.

Robert C. Hutcheson, Elk Falls, Kan.; Kansas City Medical College, 1885; member of the Kansas Medical Society; aged 80; died, January 5, of carcinoma of the stomach and liver.

Margaret Packer Forcee Kuyk ✦ Richmond, Va.; Woman's Medical College of Pennsylvania, Philadelphia, 1891; aged 78; died, January 16, of cardiovascular renal disease.

Richard Homer Fitch, Sturgis, S. D.; Washington University School of Medicine, St. Louis, 1937; aged 35; died, January 7, in Sioux City, Iowa, of coronary occlusion.

Charles Andrew Kenner, Omaha; Rush Medical College, Chicago, 1883; aged 77; died, January 23, of bronchopneumonia following an injury received in a fall down the stairs.

Otto James Schwer, St. Louis; Barnes Medical College, St. Louis, 1907; member of the Missouri State Medical Association; aged 68; died, January 9, of diabetes mellitus.

Helen Kirshbaum, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1893; aged 66; died, January 22, in the Mount Sinai Hospital of coronary thrombosis.

Charles Clinton Parker Jr., ✦ Boston; Tufts College Medical School, Boston, 1918; served during the World War; aged 45; died in January of illuminating gas poisoning.

Stuart M. Mann, Moyock, N. C.; College of Physicians and Surgeons, Baltimore, 1895; aged 64; died, January 25, in a hospital at Norfolk, Va., of coronary occlusion.

Henry Williams Hall, Winston-Salem, N. C.; Meharry Medical College, Nashville, Tenn., 1918; aged 43; died, January 7, of an incised wound of the throat, self inflicted.

Charles E. Pugh ✦ Chicago; Rush Medical College, Chicago, 1891; aged 73; died, January 18, in the Berwyn (Ill.) Hospital of a skull fracture received in a fall.

Seaborn Wesley Owens, Ashland, Ala. (licensed in Alabama in 1887); aged 85; died, January 4, in St. Luke's Hospital at Jacksonville, Fla., of cerebral hemorrhage.

Burtis W. McLean ✦ Jenks, Okla.; College of Physicians and Surgeons, Baltimore, 1906; aged 63; died, January 23, of injuries received in an automobile accident.

Charles Mellies, St. Louis; Homeopathic Medical College of Missouri, St. Louis, 1884; aged 79; died, January 31, of arteriosclerosis and coronary thrombosis.

Irvine Leland Nowlan, South Amherst, Mass.; Dartmouth Medical School, Hanover, N. H., 1894; aged 68; died, January 14, in Northampton of arteriosclerosis.

Lee Anderson Richmond, Hamilton, Ont., Canada; University of Toronto Faculty of Medicine, Toronto, 1909; aged 54; died, January 16, of heart disease.

George F. Roby, Minneapolis; Hahnemann Medical College of Philadelphia, 1881; aged 79; died, January 4, in St. Barnabas Hospital of arteriosclerosis.

Walter Preston Perkins, Girvin, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1888; aged 84; died, January 26, of pneumonia.

Paul John Love, Greensboro, N. C.; Eclectic Medical College, Cincinnati, 1922; aged 41; died, January 5, of chronic myocarditis and coronary occlusion.

Willis H. Haviland, Butte, Mont.; New York Homeopathic Medical College and Hospital, New York, 1888; aged 74; died, January 15, of chronic endocarditis.

John M. C. McAllister, Rochelle, Ga.; University of Georgia Medical Department, Augusta, 1902; aged 59; died, January 25, of coronary occlusion.

Benjamin F. Moreland, Shults, Okla.; University of Arkansas School of Medicine, Little Rock, 1912; aged 69; died, January 16, of Hodgkin's disease.

Samuel Marcus Oppenheim, Denver; Denver and Gross College of Medicine, 1904; aged 55; was found dead, January 4, of an overdose of narcotics.

Barney Ellsworth Crosby, Palo Alto, Calif.; University of Oregon Medical School, Portland, 1893; aged 77; died, January 2, of Parkinson's disease.

Louis Hamilton Seth ✦ Wittman, Md.; University of Maryland School of Medicine, Baltimore, 1908; aged 55; died, Dec. 25, 1938, of heart disease.

Monroe Hinson Tunnell ✦ Bryn Mawr, Pa.; Jefferson Medical College of Philadelphia, 1912; aged 52; died, Dec. 12, 1938, of chronic heart disease.

Thomas John Allen, Tacoma, Wash.; American Medical Missionary College, 1899; aged 69; died, January 1, of coronary occlusion and arteriosclerosis.

Samuel Purdy Blumenberg, San Francisco; California Eclectic Medical College, Los Angeles, 1900; aged 72; died, Dec. 9, 1938, of heart disease.

George R. Mitchell, Madison, Wis.; Detroit Homeopathic Medical College, 1872; Civil War veteran; aged 90; died, Dec. 31, 1938, of general debility.

Fred Ferdinand Fair, Chicago; Northwestern University Medical School, Chicago, 1905; aged 55; died, Dec. 30, 1938, of cardiovascular renal disease.

Abram Ashley Wilson ✦ Davis, Ill.; Northwestern University Medical School, Chicago, 1894; aged 68; died, Dec. 11, 1938, of coronary occlusion.

Gordon Edgar Mordoff, Wilmette, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1907; aged 56; was shot and killed, January 11.

Harry Lyman Grazier, Aliquippa, Pa.; University of Pittsburgh School of Medicine, 1912; aged 54; died, Dec. 23, 1938, of myocarditis and influenza.

Andrew Gilbert Belsheim, Guler, Wash.; State University of Iowa College of Medicine, Iowa City, 1901; aged 64; died, Dec. 21, 1938, of pleurisy.

Harmon L. Pippin, Bristol, Va.; University College of Medicine, Richmond, 1902; aged 60; was killed, January 8, when struck by a train.

Daniel W. Mears, Scranton, Pa.; Jefferson Medical College of Philadelphia, 1885; on the staff of the State Hospital; aged 79; died, Nov. 12, 1938.

Joseph N. Daniels, Milwaukee; Hahnemann Medical College and Hospital, Chicago, 1886; aged 88; died, Dec. 5, 1938, of cerebral hemorrhage.

Eugene G. Lester, Madisonville, Ky.; Meharry Medical College, Nashville, Tenn., 1915; aged 58; died, Dec. 26, 1938, of cardiorenal disease.

Henry Burr Cogswell, New York; Bellevue Hospital Medical College, New York, 1886; aged 77; died, January 5, of coronary thrombosis.

Jerome C. McNees, Ardmore, Okla.; Missouri Medical College, St. Louis, 1885; aged 76; died, Dec. 14, 1938, of carcinoma of the liver.

Henry Joseph Bell, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1892; aged 76; died, Nov. 16, 1938, of angina pectoris.

Frederick Poppe, Pulcifer, Wis. (licensed in Wisconsin in 1899); for many years postmaster; aged 88; died, Dec. 30, 1938, of senility.

James R. Steele, Danville, Ky.; St. Louis College of Physicians and Surgeons, 1893; aged 70; died, Dec. 13, 1938, of heart disease.

Winston Decatur Coates, San Jose, Calif.; California Medical College, San Francisco, 1896; aged 80; died, January 4, of pneumonia.

Willis Henry Faulkner, Garrison, Texas; Maryland Medical College, Baltimore, 1905; aged 67; died in January of pneumonia.

James M. Elliott, Ogden, Utah; Missouri Medical College, St. Louis, 1886; aged 83; died, Dec. 27, 1938, of chronic myocarditis.

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE.—The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Akalyn.—Medical Products Co., and Akalyn Co., New Orleans. Composition: Essentially acetophenetidin (3.2 grains per tablet), sodium salicylate (2 grains per tablet), magnesium oxide, starch, talc and red coloring. Misbranded because quantity or proportion of acetophenetidin present was not declared, as required by law; misbranded, further, because fraudulently represented as a remedy for all forms of pain arising from headaches, neuralgia, rheumatism, menstrual troubles, etc.—[*N. J. 27553; January 1938.*]

Anbesol.—Anbesol Co., Newark, N. J. Composition: Essentially alcohol, glycerin, water, benzocaine, menthol, camphor and small amounts of free and combined iodine and a substance resembling carbolic acid. Fraudulently represented as producing immediate local anesthesia, killing germs, and promptly relieving pain, abscesses, inflammation, fever, sores, etc.—[*N. J. 27898; April 1938.*]

Anti-Pain Liniment.—Strong, Cobb & Co., Inc., Cleveland. Composition: Essentially oils of wintergreen, eucalyptus and turpentine, in a petrolatum base. Fraudulently represented as a remedy for neuralgic pains, rheumatism, sore throat, etc.—[*N. J. 27717; April 1938.*]

Athlo Ointment and Athlo Tablets.—Athlophoros Co., Pomfret Center, Conn. Composition: Ointment, essentially menthol, thymol, camphor, wintergreen, and oils of mustard and turpentine, in an ointment base; tablets, essentially aloin, strychnine and compounds of iron, arsenic, mercury and iodine. Ointment fraudulently represented as a remedy for inflammations, croup, etc.; the tablets as effective in treating indigestion, liver disorders, general debility, gout, stomach trouble and chronic diseases.—[*N. J. 27923; April 1938.*]

Bull's (W. H.) Quick Pile Relief.—W. H. Bull Medicine Co., Inc., St. Louis. Composition: Essentially pine tar and small amounts of carbolic and tannic acids, in a petrolatum base. Not antiseptic, as represented. Fraudulent therapeutic claims.—[*N. J. 27546; January 1938.*]

Cas-Tro-Ma.—Dixie Medicine Co., McMinnville, Tenn. Composition: Essentially water, glycerin, sodium salicylate, and extracts of laxative plant drugs. For stomach troubles, sick headache, cramps, colic, etc. Fraudulent therapeutic claims.—[*N. J. 27887; April 1938.*]

Cereal Lactic.—Cereal Lactic Co., Woodward, Iowa. Examination of different specimens showed they contained viable lactic acid producing bacteria ranging from 370,000 to 2,000,000 per gram of dry material, thus falling far below the professed standard under which the product was sold. Fraudulently represented as an effective treatment of stomach and intestinal disorders, high blood pressure, nervous symptoms, arthritis, neuritis, eczema, etc.—[*N. J. 27548; January 1938.*]

Clydesdale Ointment.—George W. Bicknell Co., Pittsburgh. Composition: Essentially petrolatum, with a small amount of volatile oils including turpentine and a safrol-containing oil. Fraudulently represented as a cure for hemorrhoids, skin trouble, rheumatism, corns, sore throat, etc.—[*N. J. 27921; April 1938.*]

Corona Wool Fat Compound.—Corona Mfg. Co., Kenton, Ohio. Composition: Essentially hydrous wool fat containing a small amount of common salt, and perfumed with oil of wintergreen. Fraudulently represented as a remedy for sores, boils, wounds, etc.—[*N. J. 27720; April 1938.*]

Count's Kill Germ.—Count's Chemical Co., Nashville, Tenn. Composition: Essentially mineral oil, with small amounts of pine-needle oil and water. Not an antiseptic or germicide, as represented. For rheumatism, asthma, indigestion, bad blood, erysipelas, "piles," etc. Fraudulent therapeutic claims.—[*N. J. 27727; April 1938.*]

Dodds (Dr.) Purgolax Tablets.—Southwestern Chemical Co., Jonesboro, Ark. Composition: Essentially phenolphthalein, calomel and laxative plant drugs, such as aloe, coated with chalk, sugar and a pink coloring material. Fraudulently represented as a remedy for autointoxication, constipation, and certain forms of biliousness.—[*N. J. 27568; January 1938.*]

Duray.—Duray Laboratories, Inc., Seattle. Composition: Essentially borax, with small amounts of boric and carbolic acids, menthol and a blue pigment. Fraudulently represented as a remedy for female disorders, an aid to the menopause, and a germicide.—[*N. J. 27558; January 1938.*]

Effervescent Seltzer.—Honoroff Laboratories, Inc., Chicago. Composition: Essentially baking soda, citric and tartaric acids, with 1.2 per cent of acetanilid (5 grains per ounce), 2.8 per cent of sodium bromide, and caffeine. For stomach disorders and after-effects of excessive eating or drinking. Fraudulent therapeutic claims.—[*N. J. 27567; January 1938.*]

Elder Flower Eye Lotion.—George B. Evans Laboratories, Inc., Philadelphia. Composition: Essentially a dilute solution of boric acid and common salt, with a small amount of alcohol and lesser quantities of plant extractives including camphor, peppermint, cherry laurel and elder flowers. Falsely represented as being essentially elder flower, peppermint, witch hazel, cherry laurel and camphor; fraudulent therapeutic claims.—[*N. J. 27884; April 1938.*]

Elixir Tussinol.—Medicinal Research Laboratories, Philadelphia. Composition: Essentially a solution of gold bromide. Fraudulently represented as a remedy for whooping cough and other spasmodic coughs.—[*N. J. 27563; January 1938.*]

Eupraxine Eczema Salve and Eupraxine Wound Salve.—Eupraxine Co., Detroit. Composition: The first named was essentially zinc stearate and boric acid, in petrolatum, and the second was essentially ichthammol and petrolatum. Fraudulent therapeutic claims.—[*N. J. 27907; April 1938.*]

Fairey Oil.—Fairey Wholesale Drug Co., Inc., Orangeburg, S. C. Composition: Essentially oils of wintergreen and turpentine, and a green coloring material. Fraudulently represented as a remedy for neuralgia, rheumatism, cramps, insect bites, etc.—[*N. J. 27551; January 1938.*]

Filkins' (J. L.) Wonderful Wintergreen.—J. L. Filkins & Co., Yonkers, N. Y. Composition: Essentially potassium iodide (2.5 per cent), alcohol and water, with extracts of plant drugs including colchicin, flavored with wintergreen. Fraudulently represented as a remedy for various forms of rheumatism.—[*N. J. 27922; April 1938.*]

Flame Liniment.—G. F. Foster Products Co., St. Paul, Minn. Composition: Essentially a petroleum oil, with small amounts of volatile oils including mustard, wintergreen and cinnamon, colored with a red dye. Fraudulently represented to kill pain and relieve rheumatism, stiff neck, lame back and aching joints.—[*N. J. 27890; April 1938.*]

Goody's Headache Powder.—Goody's, Inc., Winston-Salem, N. C. Composition: Chiefly acetanilid, though each tablet contained less than the 4 grains claimed; hence adulterated. Misbranded because falsely represented as safe and reliable, and as containing no narcotics.—[*N. J. 27925; April 1938.*]

Grandma's Dia-Col.—Park Laboratory Co., Inc., San Antonio, Texas. Composition: Essentially extracts of plant drugs, with small amounts of camphor, menthol and red peper, alcohol (28 per cent by volume), glycerin and water. Fraudulently represented as a remedy for colic, diarrhea, cramps, etc.—[*N. J. 27731; April 1938.*]

Heinrich's Dermo Carbo Salve.—Heinrich Chemical Co., Minneapolis. Composition: Essentially a small amount of carbolic acid in a petrolatum base. Fraudulently represented as an effective treatment for sores, cuts and wounds.—[*N. J. 27746; April 1938.*]

Heinrich's Pain-A-Way.—Heinrich Chemical Co., Minneapolis. Composition: Chiefly water, alcohol and oils of mustard and cinnamon. Fraudulently represented as a cure for cramp pains, colic, diarrhea, rheumatic pains and aching joints.—[*N. J. 27747; April 1938.*]

Heinrich's Medicated Ointment.—Heinrich Chemical Co., Minneapolis. Composition: Camphor, oil of eucalyptus, and a very small amount of zinc oxide. Fraudulently represented as a healing and penetrative treatment for all skin affections and injuries.—[*N. J. 27747; April 1938.*]

Heinrich's Rheumatism Remedy.—Heinrich Chemical Co., Minneapolis. Composition: Essentially a watery alcoholic solution of sodium salicylate, sugar, and a small amount of plant extractives. Fraudulent therapeutic claims.—[*N. J. 27747; April 1938.*]

Heinrich's San-I-Cide.—Heinrich Co., Minneapolis. Composition: Alcohol, water, zinc chloride, menthol, aromatics and traces of formaldehyde. Misbranded because alcohol content was not over 2.6 per cent by volume, whereas labels represented it to be approximately 12 per cent. Fraudulently represented as a cure for bleeding gums, sore throat, tonsillitis, wounds, etc.—[*N. J. 27747; April 1938.*]

Helm's Jen-A-Rub.—Helm Co., Benton Harbor, Mich. Composition: Essentially oil of wintergreen and menthol, in a petrolatum base. For chest colds, sinus trouble, sore throat, influenza, pneumonia, neuritis, etc. Fraudulent therapeutic claims.—[*N. J. 27566; January 1938.*]

Hessel's Oil de Vita Salve.—Vita Laboratories, Philadelphia. Composition: About 20 per cent of peppermint oil in an oily base, apparently petrolatum. Fraudulently represented to relieve eczema and other skin eruptions, and rheumatism.—[*N. J. 27702; April 1938.*]

Histosan.—Histosan, Inc., New York. Composition: Essentially sugar, water, alcohol and small amounts of guaiacol, ammonium chloride, common salt, Glauber's salt and protein material. Fraudulently represented as a remedy for colds and kindred disorders.—[*N. J. 27723; April 1938.*]

Isaac's (Dr.) Big Jim.—Tampa Drug Co., Tampa, Fla. Composition: Essentially potassium iodide (52 grains per fluidounce), alcohol, water and plant drug extracts. Fraudulently represented to cure impure blood, boils, sores, rheumatism, etc.—[*N. J. 27725; April 1938.*]

Isaac's (Dr.) Big Jim Healing Fluid (or Liquid).—Tampa Drug Co., Tampa, Fla. Composition: A watery solution containing about 6 per cent of mercuric chloride. Fraudulently represented as an efficacious sore-wash.—[*N. J. 27725; April 1938.*]

La-Vim.—Lewis Laboratories, Inc., Atlanta. Composition: Essentially plant drugs including a laxative, and nux vomica, a phosphorus compound, sugar, alcohol and water, with cinnamon flavor. Fraudulently represented as a "tonic" to correct malnutrition, languor and frailty in persons of all ages.—[*N. J. 27573; January 1938.*]

Little Wonder Page's Inhalers (Cigarets).—Consolidated Chemical Co., Grand Rapids, Mich. Composition: Essentially plant material, chiefly stramonium leaves. For asthma, hay fever, catarrh, bronchitis and hoarseness. Fraudulent therapeutic claims.—[*N. J. 27715; April 1938.*]

Lund's Magic of the Grape.—Lund's Grape Juice Co., Erie, Pa. Not pure grape juice, as represented, as it was diluted and contained added grape sugar. Fraudulently represented as a cure for colds, stomach, liver, kidney, lung and bladder troubles, rheumatism, etc.—[*N. J. 27569; January 1938.*]

M. F. C. Chill and Malaria Tonic.—Southwestern Chemical Co., Jonesboro, Ark. Composition: Essentially sugar, water, cinchonine, phenolphthalein, an iron compound, benzoic acid and extracts of plant materials. Adulterated and misbranded in that it did not contain either quinine or quinidine as presented. "Tonic." Fraudulent therapeutic claims.—[*N. J. 27568; January 1938.*]

Migro-Powder.—C. J. Czarnecki, Detroit. Composition: Essentially baking soda and milk sugar, with 4.3 grains of acetanilid in each powder. Misleadingly labeled as containing 6 grains of acetanilid per powder; fraudulently represented as a remedy for neuralgia and la grippe.—[*N. J. 27713; April 1938.*]

Miller's (Dr.) Tonic Prescription.—International Research Laboratory, Chicago. Composition: Essentially water, sugar, alcohol and extracts of plant drugs, including a laxative one. Fraudulently represented as a system cleanser and a remedy for sick headache, insomnia, stomach ulcers, high blood pressure, rheumatism, anemia, etc.—[*N. J. 27714; April 1938.*]

Mimein Laxative-Aspirin.—Miller Medicals, Inc., Indianapolis. Composition: Essentially, in each tablet, 1 grain of acetanilid, 1/10 grain of aspirin, with plant drugs including caffeine, cascara sagrada and aloin. Misbranded in falsely intimating that the product was chiefly aspirin, and in failing to declare the amount of acetanilid present. Fraudulently represented to possess the efficacy of aspirin.—[*N. J. 27719; April 1938.*]

Monitol Bath Treatment.—H. A. Montgomery Co., Detroit. Composition: Essentially water and an ichthammol-like material. Fraudulently represented to relieve pains of arthritis, rheumatism, sciatica and lumbago.—[*N. J. 27722; April 1938.*]

Needham's Red Clover Extract.—D. Needham's Sons, Chicago. Composition: Essentially plant materials whose ash was chiefly calcium, magnesium, potassium, sodium and iron phosphates, chlorides and sulfates. Fraudulently represented as effective for constipation, abnormal tissue changes, carbuncles, stomach troubles, mouth and throat disorders, etc.—[*N. J. 27743; April 1938.*]

Odo-Go.—National Products Co., Fort Worth, Texas. Composition: Essentially sodium carbonate, with a small amount of potassium permanganate. Misbranded because not a disinfectant, antiseptic or germicide, when used as directed. Fraudulently represented as a cure for skin eruptions, dandruff, sore throat, ulcers, etc.—[*N. J. 27878; April 1938.*]

Oilax Compound Tablets.—G. Knewitz, East St. Louis, Ill. Composition: Essentially phenolphthalein (about ¾ grain per tablet) and extracts of plant material including aloe, strychnine and croton oil. Fraudulently represented as a tonic and preventive of constipation.—[*N. J. 27572; January 1938.*]

Phillips' Croup and Pneumonia Salve.—Phillips Products Co., Watertown, Tenn. Composition: Essentially oils of eucalyptus and pine, in petrolatum. Fraudulently represented as a cure for chest troubles.—[*N. J. 27885; April 1938.*]

Prieto Tonic.—Indian Laboratory Co., Laredo, Texas. Composition: Essentially water, glycerin, alcohol, potassium iodide (about 9 grains per fluidounce), sodium benzoate, and extracts of plant drugs including cinchona. Fraudulently represented as an effective general alterative tonic, aperitif, nerve sedative, blood purifier, and remedy for skin diseases, anemia, etc.—[*N. J. 27740; April 1938.*]

Q. E. D. Mineral Water.—Q. E. D. Mineral Water Co., Shakopee, Minn. Composition: Essentially water containing sulfur dioxide. Falsely represented as a mineral water or mineral water synthetic, and a new discovery. For use on open wounds, burns, cuts, and as a nose and throat spray for colds and catarrh. Fraudulent therapeutic claims.—[*N. J. 27894; April 1938.*]

Rel-Ka-Sol.—Rel-Ka-Sol Chemical Co., Philadelphia. Composition: Essentially water, alcohol, borax and a small amount of carbolic acid. For cuts, burns, abscesses, boils, tonsillitis, blood poison, etc. Fraudulent therapeutic claims.—[*N. J. 27892; April 1938.*]

Reliable Perio Pills.—Rex Drug Co., and Reliable Medical Co., Chicago. Composition: Brown tablets, essentially compounds of sodium and iron, sulfates, carbonates and aloe, coated with chalk; pink tablets, essentially phenolphthalein and ginger, with sugar and chalk. For menstrual irregularities. Fraudulent therapeutic claims.—[*N. J. 27912; April 1938.*]

Rex Improved Hygienic Powder.—Rex Drug Co., and Reliable Medical Co., Chicago. Composition: Essentially boric acid (99.2 per cent) and a small amount of thymol. For leucorrhea, gonorrhea, etc. Fraudulent therapeutic claims.—[*N. J. 27912; April 1938.*]

Rex Pep-Tone Pills.—Rex Drug Co., and Reliable Medical Co., Chicago. Composition: Essentially iron and sodium, sulfates, carbonates and zinc phosphide, coated with chalk. Fraudulently represented as a "tonic" and blood and nerve builder.—[*N. J. 27912; April 1938.*]

Ru-Ma.—Dr. Leonhardt Co., Buffalo. Composition: Essentially an aqueous solution of iodides, salicylates, acetates and a laxative plant drug. For rheumatoid conditions, gouty diathesis, etc. Fraudulent therapeutic claims.—[*N. J. 27739; April 1938.*]

Sal-I-Can.—Dr. J. L. Davis, Irvine, Fla. Composition: Essentially salicylic acid, alcohol, acetone and water. Fraudulently represented as an effective treatment for ringworm, infected wounds, tumors, eczema, etc.—[*N. J. 27738; April 1938.*]

Sharpsteen's (Dr.) Hindoo Salve No. 16.—Drs. H. & V. Sharpsteen, Marshall, Mich. Composition: Essentially small amounts of chloroform and volatile oils including sassafras and cloves, in a fatty base. Misbranded because not labeled as to quantity or proportion of chloroform present; fraudulently represented as a remedy for pneumonia, "piles," constipation, kidney and liver disorders, eczema, etc.—[*N. J. 27712; April 1938.*]

Sharpsteen's (Dr.) Vegetable Hindoo Oil No. 5.—Drs. H. & V. Sharpsteen, Marshall, Mich. Composition: Essentially saponifiable and volatile oils including those of sassafras, cloves, menthol and camphor, with chloroform (15 per cent by volume). Falsely represented as being wholly a vegetable oil, which it was not; recommended for dyspepsia, gallstones, dropsy, appendicitis, rheumatism, tuberculosis, etc. Fraudulent therapeutic claims.—[*N. J. 27712; April 1938.*]

Sharpsteen's (Dr.) Vegetable Tablets Nos. 1, 2, 3 and 4.—Drs. H. & V. Sharpsteen, Marshall, Mich. Composition: "No. 1," calcium and ferrous (iron) carbonates, potassium and sodium sulfates, and plant drugs including a strychnine-bearing drug and a laxative one; "No. 2," magnesium and calcium carbonates and plant drugs, including a strychnine-bearing drug and a laxative one; "No. 3," ferrous (iron), magnesium and calcium carbonates, and plant drugs, including quinine and a laxative one; "No. 4," calcium carbonate and plant drugs, including a laxative one. All fraudulently represented as remedies for stomach, liver and blood diseases, different forms of rheumatism, tonsillitis, catarrh, pneumonia, erysipelas, etc.—[*N. J. 27712; April 1938.*]

Shiloh.—S. C. Wells & Co., LeRoy, N. Y. Composition: Essentially terpin hydrate, tar oil, and volatile oils including peppermint, with chloroform, glycerin and water. Fraudulently represented as a remedy for coughs, angina, croup, and all pulmonary diseases including tuberculosis.—[*N. J. 27539; January 1938.*]

Simba.—G. F. Foster Products Co., St. Paul. Composition: A dark, turbid, watery-alcoholic solution of plant material, epsom salt, sodium salicylate, and an emodin-bearing drug. Fraudulently represented as a cure for stomach, liver, kidney and blood disorders caused by constipation, autointoxication and improper digestion. Further misbranded in being represented as consisting wholly of roots and herbs.—[*N. J. 27749; April 1938.*]

Si-Noze.—Si-Noze Products, Chicago. Composition: Essentially benzocaine, ephedrine, camphor and menthol, dissolved in a mixture of mineral matter and fatty oil. For sinus troubles, hay fever, catarrh, etc. Fraudulent therapeutic claims.—[*N. J. 27718; April 1938.*]

Sitroux-Aids.—Sterilak Co., Inc., Utica, N. Y. Composition: Tissue paper containing small amounts of menthol and essential oils, such as cedar and eucalyptus. For hay fever, sinus disorders, etc. Fraudulent therapeutic claims.—[*N. J. 27734; April 1938.*]

Skoot.—Skoot Co., Hamilton, Ohio. Composition: Essentially wintergreen, menthol, water and a gum. For pains of rheumatism, lumbago, pleurisy, headache, congestion, etc. Fraudulent therapeutic claims.—[*N. J. 27886; April 1938.*]

Snipes' Japicura Skin Remedy.—Snipes Medicine Co., Little Rock, Ark. Composition: Essentially carbolic acid (17 per cent by weight), glycerin, sassafras oil, menthol and salicylic acid. Not a germicide, as represented. Claims for its curative effects were fraudulent.—[*N. J. 27395; December 1937.*]

Snuffly.—Vita Laboratories, Philadelphia. Composition: Eucalyptus oil. For sinus trouble, asthma, hay fever, etc. Fraudulent therapeutic claims.—[*N. J. 27702; April 1938.*]

Sun-Ray Vita-Lax.—Vita-Lax Products Co., Birmingham, Ala. Composition: Essentially bran, agar agar, psyllium seed, yeast and phenolphthalein (about 0.3 grain per average level teaspoonful). Misbranded because represented as a vitamin laxative, whereas it was essentially a phenolphthalein laxative. Fraudulently represented as a remedy for acid indigestion, deficiency diseases, rheumatism, obesity, etc.—[*N. J. 27750; April 1938.*]

Ter-O-Sul.—National Hygienic Corporation, Brooklyn. Composition: Essentially starch, sodium bisulfate, baking soda, noncolloidal sulfur (7.4 per cent), and a trace of other inorganic compounds. Misbranded because it contained not more than a trace of colloidal sulfur, if any, and because fraudulently represented as a treatment for arthritis, sciatica, neuritis, gout, skin eruptions, impure blood, etc.—[*N. J. 27742; April 1938.*]

Trask's Treatment for Constipation.—Western Laboratories, Inc., Chicago. Composition: Essentially plant drugs, phenolphthalein and strychnine, coated with chalk and an iron compound. Fraudulent therapeutic claims.—[*N. J. 27910; April 1938.*]

Trents Eucalyptol Compound.—John J. Samuels, Chicago. Composition: Essentially water, sugar, gum, and small amounts of eucalyptol and menthol. Fraudulently represented as a cure for throat and lung affections.—[*N. J. 27732; April 1938.*]

Van Ogden Wonderful Liniment.—Van Ogden, Inc., Chicago. Composition: Essentially small amounts of wintergreen, menthol, red pepper, camphor, chloroform (7 minims per fluid ounce), and mineral oil. Fraudulent therapeutic claims.—[*N. J. 27910; April 1938.*]

Van's Magic Oil.—Guy S. Venderlinde, Muskegon, Mich. Composition: Essentially volatile oils (10 per cent) including those of camphor and eucalyptol, in a base of linseed oil. Fraudulently represented as a remedy for inflammatory diseases, rheumatism, hemorrhoids, toothache, etc.—[*N. J. 27915; April 1938.*]

Vapor Balm (Anti-Pain Ointment).—Specialized Laboratory, Buffalo. Composition: Essentially oil of wintergreen, menthol and petrolatum. Fraudulently represented as a remedy for colds and other congestions, rheumatism, neuralgia, etc.—[*N. J. 27708; April 1938.*]

Whitmarsh Blood Elixir.—Whitmarsh Laboratories, Adrian, Mich. Composition: Essentially water, alcohol (10 per cent by volume), a small amount of benzoic acid, and extracts of plant drugs including anise and an alkaloid-bearing drug. For skin poisonings (such as from ivy, oak or sumac), eczema, psoriasis, etc. Fraudulent therapeutic claims.—[*N. J. 27741; April 1938.*]

World's Wonder Massage.—World's Wonder Medicine Co., Inc., Detroit. Composition: Essentially small amounts of ammonia water, quinine, volatile oils including wintergreen and camphor, with turpentine, alcohol and water. Fraudulently represented as a cure for rheumatism, swollen feet, stiff joints, pneumonia, etc.—[*N. J. 27540; January 1938.*]

Zomogo Oil.—L. Zomogo Hood, Hot Springs, Ark. Composition: Essentially a mixture of oils, including those of petroleum, eucalyptus, mustard, clove and cinnamon. "Cure-all." Fraudulent therapeutic claims.—[*N. J. 27920; April 1938.*]

Correspondence

TREATMENT OF DELIRIUM TREMENS

To the Editor:—"The Treatment of Delirium Tremens," a contribution of Bowman, Wortis and Keiser in the April 1 issue of THE JOURNAL, is of especial interest to physicians who are meeting patients suffering with delirium tremens. It cannot be doubted that this complication of chronic alcoholism is one of the most difficult conditions met by physicians practicing in both general and psychopathic hospitals. The average physician or nurse is not trained in a large municipal and state institution where any considerable number of alcoholic patients are admitted for treatment. Hence many of these patients, being poorly understood, are improperly treated and the death rate therefore is inordinately high.

A study which I made some years ago revealed that the mortality from delirium tremens varied from 15 to 50 per cent in various hospitals throughout the country. The article to which reference has been made might well have referred to the fact that delirium tremens is a complication of high tolerance alcoholism and that the periodic drinker, unless he persists in maintaining a high saturation of bodily fluids over a period of many days or weeks, is not likely to have this complication. The Saturday night drinker, even though he receives some trauma to the body or head, is not likely to become delirious. The reason for this complication being confined to high tolerance drinkers is ill understood and probably is explained by the various vitamin and hepatic deficiencies described by Bowman, Wortis and Keiser. It would have been highly helpful if these writers had stressed the fact that alcoholic delirium is a condition which under the best of treatment is likely to continue from three to five days and that the surest way to raise the mortality is to endeavor to produce, by means of depressant drugs, a critical sleep from which the patient will awake with a clear mentality. It is probable that a lack of understanding of that fact accounts for the great variance in mortality rates just mentioned, since morphine, chloral and bromides in large doses, and even the barbiturates, are likely to do much harm. Physical therapy with treatment of the acidosis present and with the understanding that the patient will not do well under physical restraint and will continue to be delirious for several days should materially lower the mortality of delirium tremens. A decade and a half spent in a large municipal institution, admitting from 3,000 to 4,000 alcoholic patients annually, has still left some doubt in my mind as to whether rapid withdrawal of alcohol, because of a nonretentive stomach, a loss of ability to purchase a drink or trauma incurred on the street, which hospitalizes the patient, does not play some part in the precipitation of the delirium. During the prodromal period of delirium tremens, i. e. before hallucinosis develops, it will at least do no harm to administer alcohol. After hallucinosis is actually manifest, alcohol certainly should be interdicted.

JOSEPH C. DOANE, M.D., Philadelphia.

REGARDING A HYPOGLYCEMIC FACTOR IN THE DUODENUM

To the Editor:—The correspondence of Dr. Garfield G. Duncan on "The Clinical Application of Duodenal Extract in the Treatment of Diabetes" in THE JOURNAL, March 18, commands interest. Since Duncan and his associates (Duncan, G. G.; Shumway, N. P.; Williams, T. L., and Fetter, Ferdinand: *Am. J. M. Sc.* **189**:403 [March] 1935) administered their extract by mouth, it is not surprising that interest should attach to their therapy.

The presence of a hypoglycemic factor in crude secretin was recognized almost from the very discovery of secretin by Bayliss and Starling (Bayliss, W. M., and Starling, E. H.: *J. Physiol.* **25**:325, 1902). As early as 1906, Moore, Eadie and Abrams reported seemingly good results with the use of hydrochloric acid extracts of the duodenum and upper part of the jejunum in clinical diabetes. Since then a great deal of experimental effort has been spent in isolating this hypoglycemic factor from crude secretin.

Because boiling the duodenal extracts with dilute acids destroys the hypoglycemic effect but leaves the secretin action intact, Dixon and Wadia (Dixon, W. E., and Wadia, J. H.: *Brit. M. J.* **1**:820 [May 8-15] 1926) believe that the blood sugar reducing agent is separate from the secretory agent. This view is supported by Lalou (Lalou, S.: *J. de physiol. et de path. gén.* **14**:465, 1912), Mellanby (Mellanby, J.: *J. Physiol.* **66**:1 [Sept.] 1928) and Heller (Heller, H.: *Arch. f. exper. Path. u. Pharmakol.* **145**:343, 1929) because of the rapid destruction of secretin by pepsin and trypsin, which do not affect the hypoglycemic agent. Finally, methods were devised (La Barre, Jean, and Still, E. U.: *Am. J. Physiol.* **91**:649 [Jan.] 1930) by which crude secretin could be separated into two fractions: one possessing but little secretagogic but highly hypoglycemic action, the other actively secretagogic and not at all hypoglycemic.

The question then raised was whether the hypoglycemic agent might represent insulin extracted from the duodenum. Heller in 1929, using insulin-extracting methods on beef intestine, found no insulin in mucosa of the upper part of the small intestine. About the same time La Barre and Still, utilizing the fact that insulin is inactivated by pepsin-hydrochloric acid, failed by this method to destroy the hypoglycemic action of crude secretin. On the same basis, the effectiveness of the oral administration of duodenal extracts to lower the blood sugar in diabetic dogs reported by La Barre (*Bull. Acad. roy. de méd. de Belgique* **14**:469, 1934) and in diabetic patients by Duncan and his associates speaks against its being merely insulin. Finally, using the method of pancreatico-jugular anastomosis between adrenal-decapsulated dogs, Zunz and La Barre (Zunz, E., and La Barre, Jean: *Comp. rend. Soc. de biol.* **99**: 335 [June 29] 1928) observed a lowering of blood sugar after the intravenous injection of nonhypotensive secretin in the donor which was much less marked than that in the recipient. This, of course, would not be the expected result if the extract were insulin.

Since crude secretin contained an agent other than insulin, investigators attempted to determine whether this agent acted by stimulating the pancreas or was capable, by itself, of lowering the blood sugar. In animals there are numerous experimental results which support one or the other action, but those of Zunz and La Barre (*Bull Acad. roy. de méd. de Belgique* 8:801, 1928) appear to support a dual mechanism. Using adrenalectomized dogs with pancreaticojugular anastomoses, they found that purified secretin injected into the donor dog caused a drop in blood sugar in both the donor and the recipient, with the fall more marked in the latter. Since in this experiment the donor is physiologically depancreatized, the results given may be interpreted as a double action of the hypoglycemic agent. This concept is fortified by their results

with jugulojugular anastomoses: the injection of secretin into the donor produced only a slight decline in the recipient, and this was less marked than that which occurred in the donor.

In human subjects both in normal persons and in patients with mild diabetes, we (*Ann. Int. Med.* **11**:1563 [March] 1938) have repeatedly been able to prevent alimentary hyperglycemia following the absorption of amounts of dextrose ordinarily adequate to produce a sharp rise in blood sugar. We accomplished this by duodenal mucosal stimulation during the time of absorption of dextrose. In one instance we were fortunate in having available for study a patient with very severe diabetes who had either a diffusely calcified pancreas or intrapancreatic ducts which contained stones in many of its branches. By roentgenograms we were able to visualize many small diffusely calcified areas in the region of the pancreas. In this patient duodenal stimulation under the conditions described failed to prevent the rise in blood sugar that occurred after the absorption of a similar amount of dextrose when duodenal stimulation was omitted. These results lead us to believe that in man the hypoglycemic duodenal agent acts essentially through islet stimulation. Further, that, if true, little can be expected from the use of duodenal extracts in the treatment of diabetes in man; in mild cases of diabetes some effect may be seen from islet stimulation; in severe diabetes there will probably be no effect or even an injurious one by stimulation of already severely damaged islets.

HARRY SHAY, M.D.
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MANAGEMENT OF TETANY

To the Editor:—The article by Margolis and Krause (THE JOURNAL, March 25, p. 1131) raises an important point that is not generally accorded sufficient recognition. Despite the frequent demonstration of the importance of phosphorus in tetany, little attention is paid to this element in the dietary management of clinical parathyroid tetany. Shelling and Goodman (THE JOURNAL, March 3, 1934, p. 669) pointed out that neglect of this factor may account for the occasional refractoriness of such patients to treatment with calcium and solution of parathyroid. There are several observations supporting the view that a relatively high phosphorus intake tends to exaggerate the metabolic defect characteristic of the hypoparathyroid state (Albright, Bauer, Claflin and Cockrill: *J. Clin. Investigation* **11**:411 [March] 1932. Robbins and Kydd, *ibid.* **14**:220 [March] 1935. Allardyce: *Am. J. Physiol.* **98**:417 [Oct.] 1931). The fact is too frequently overlooked that milk, which is usually administered in large amounts in such cases, provides an excess of phosphorus as well as calcium and may actually exert a deleterious effect in parathyroprivic tetany. Objections to the use of vitamin D in this condition have been emphasized by Shelling (*Bull. Johns Hopkins Hosp.* **50**:318 [May] 1932; THE JOURNAL, March 3, 1934, p. 669; *Am. J. Dis. Child.* **47**:61 [Jan.] 1934) and Cantarow (*Internat. Clin.* **1**:230 [March] 1936; *Endocrinology* **21**:368 [May] 1937). This matter is discussed in the report in *Endocrinology* (**24**:556 [Feb.] 1939) of a case of chronic idiopathic hypoparathyroidism which did not respond to vitamin D therapy and was effectively controlled by solution of parathyroid and a high calcium, relatively low phosphorus intake over a period of five and a half years. This regimen became ineffective on two occasions when the only change consisted in an increased intake of phosphorus (and calcium) (milk) and vitamin D and again became effective when the latter were omitted.

In the article by Margolis and Krause, no statement is made regarding the phosphorus content of the diet during the period of uncontrolled tetany (seven months). It is specified that a low phosphorus diet was given for about ten days prior to the administration of dihydrotachysterol, but apparently solution of parathyroid was not given during this period.

This comment is in no sense a criticism of the use of dihydrotachysterol in parathyroprivic tetany; there can be little question of the effectiveness of this agent in this condition. I feel, however, that the fact should be emphasized that the phosphorus content of the diet must be maintained at a relatively low level during administration of solution of parathyroid before the conclusion is reached that the latter agent is ineffective. If this is done, I believe that there will be fewer instances of apparent refractoriness to solution of parathyroid in parathyroprivic tetany.

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Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

OPTIMUM AIR CONDITIONS IN HOUSES

To the Editor:—Please advise me of the present opinions of the hygiene of living room temperatures. Few families have instruments for measuring humidity and many old persons complain of chilliness unless the thermometer registers from 76 to 80 F. Is this harmful? If so, what reason can be given them why it is worse than the same temperatures in summer? At what distance from the floor should the thermometer be hung?

M.D., California.

ANSWER.—Room temperatures much above 70 F. are generally considered undesirable in cold weather because they aggravate the effects of temperature contrasts when persons pass from overheated rooms to cold outside air. Because of a reduced metabolic rate and lack of resilience of the vasomotor system many elderly persons require temperatures in the upper seventies, but an attempt should be made to reduce the comfortable temperature level by suitably insulating exposed walls and by the employment of tight fitting storm sashes when such measures are justified.

Measurements of temperature are usually made at a level 36 inches above the floor and at least 3 feet away from the exposed walls. In rooms for the aged it is preferable to record the temperature at knee-height level, 18 inches above the floor.

In warm summer weather an indoor temperature of 80 F., or even 85 F., with low humidity is comfortable and desirable, from the standpoint of health, because the human organism becomes adapted to heat and cannot stand sudden drops in temperature, especially when the body surfaces are wet with perspiration. The practice of cooling public buildings to 80 F. or less in hot weather appears to be a distinct menace to the health of susceptible persons who expose themselves to such contrasts in temperature.

LIVER EXTRACT FOR HYPERTENSION

To the Editor:—In the first edition of Beckman's "Treatment in General Practice" I find reference to a liver extract used in essential hypertension. Will you inform me of the form of liver extract used in this condition and its probable value in such a condition of some three years' standing in a woman "passing through" the menopause?

M.D., Arizona.

ANSWER.—Hypodermic administration of liver extracts in the treatment of hypertension was enthusiastically advocated some ten or twelve years ago. That a vascular relaxation and transient fall in the arterial tension occur after such injections has been thoroughly demonstrated. The hepatic extracts were said to abolish the pressor effects of guanidine on smooth muscle (Major, R. H.: *J. Kansas M. Soc.* **25**:177 [June] 1925) but the evidence that guanidine is a significant etiologic factor has never been convincing.

Since then, tissue extracts other than that of liver have been given extensive clinical and experimental trial. Active preparations of muscle, brain, spleen, myocardium and pancreas (insulin-free extract) have been studied. They are all antagonistic to the action of epinephrine. It is claimed that their vasodilator activity is not due either to histamine or to choline. The active principles appear to be closely related to adenosine or adenylic acid. Knowledge, however, concerning the active

fractions of these extracts is still incomplete and their clinical application tentative and experimental.

All these tissue extracts must be given by injection, either subcutaneously or intramuscularly. The injections must be repeated two or three times a week at least. It thus becomes increasingly difficult to retain the patient's cooperation, particularly since the great majority of hypertensive persons feel well. The clinical results have proved most disappointing.

On the meager data available it is impossible to suggest the proper therapeutic approach for the patient mentioned. Hypertensive arterial disease is a highly individualized disorder, especially regarding its provocative etiology. Thus the therapy of individual cases should depend on the etiologic factors involved.

DERMATITIS FROM RED LEAD

To the Editor:—A man was first seen by me in the fall of 1937 because of a generalized erythematous and intensely pruritic dermatitis involving the whole body more or less uniformly. He was a tall blond, middle aged Scandinavian and for eight months had been employed on a dredge. His work was painting metal on the dredge with red lead, which he did for about six months. After this time an irritative erythematous dermatitis developed in both popliteal regions and over both hip areas. He quit work immediately and consulted a physician, who treated him symptomatically without improvement. Because of the gradual spread of the dermatitis he consulted a skin specialist, who hospitalized him, and he remained in various hospitals under the care of various specialists about seven months. On the basis that this was a contact dermatitis or a cutaneous manifestation of a systemic poisoning, conservative management consisted of calamine in oil with 1 per cent phenol packs, boric acid packs, Rowe's elimination diet, numerous antipruritic ointments and sedation. This therapy was carried out in the hospitals and all orders were meticulously followed. For the next several months the patient experienced remissions and exacerbations, but in the last analysis the condition remained stationary. The elimination diet revealed nothing significant, and sodium thiosulfate intravenously was given daily and fractional doses of superficial roentgen therapy were given over the entire body, small areas at a time. Patch tests could not be done because of the extremely irritated condition of the skin. There were removed from his bed one or two cupfuls of branny, desquamated skin. His condition remained about the same, so he was sent to the university hospital for further care, only to return in about the same condition. Finally about ten months after the onset there was a gradual but definite improvement, and after a siege of about twelve months his skin again became normal. Search was then instituted for a probable offending agent in his residential and occupational environment, and by patch tests he was found definitely sensitive to some of the red lead that he had previously used. Could this have been a generalized dermatitis due to lead or lead oxide or to systemic lead poisoning? Have there been like cases reported in the literature? What further therapy could have been used? What is the value of x-rays or ultraviolet rays in the treatment of this condition? Is the use of sodium thiosulfate logical? Please enumerate references to be found in the literature about this type of dermatitis.

M.D., Minnesota.

ANSWER.—The case described brings out many factors to be considered in a diagnosis of dermatitis due to paints.

First, "red lead" or minimum (Pb_3O_4) is not often used today in red paints or, if it is, only in small quantities. Even white lead is sparingly used because of the hazard of lead poisoning.

There are many substitutes for red and white lead, and these substitutes are the ones extensively used as paint pigments. The red pigments most frequently used are made from synthetic dyestuffs, the principal red ones being paranitraniline red, No. 44 in the Colour Index, lithol red 2G, No. 166, toluidine red, No. 69, alizarin, No. 1036, and eosin, No. 771 in the Colour Index. The coal tar pigments are used in the form of lakes, which are made by precipitating organic dyes on inorganic bases, the lake thus formed being similar to a dyed fabric. Other red pigments used are mercuric sulfide, red oxide of iron, cadmium sulfide, selenium sulfide, red oxide of mercury and chrome red or basic lead chromate. A few of the natural dyes such as madder and cochineal are also occasionally used as lakes in paints. The principal bases used for lakes are precipitated barium sulfate, known as blanc fixé, barite, and sometimes white lead (basic lead carbonate) and lead sulfate. From this it is evident that the patient's actual exposure to lead may have been none at all or very little. In order to make sure of this, it would be necessary to make a chemical analysis of the paint that the patient used.

Paints, in addition to the pigment, contain a medium of drying oil and a thinner. The drying oils may be tung oil, linseed oil, castor oil, perilla oil, soybean oil, cottonseed oil, pine oil and fish oil.

The thinners are turpentine or turpentine substitutes such as petroleum distillates. In addition to this, paints also contain driers which may be organic or inorganic, such as the linoleates of metals and the oxides of metals.

The most likely substances in paints from which a contact dermatitis may be developed are the thinners. Hypersensitivity may also be present toward some of the drying oils and toward some of the pigments, especially the synthetic dye lakes.

Lead has not been reported to have caused dermatitis. It would have been interesting to examine the patient for the symptoms of lead poisoning or lead absorption such as colic, blue line on the gums, anemia, weakness of the extensors of the wrists, albuminuria and punctate basophilia ("stippling") and to examine the urine and feces for the presence of lead, especially after the administration of sodium thiosulfate.

Since dermatitis is not one of the symptoms of lead poisoning, the dermatitis was not from that cause. If it was a contact dermatitis, it would be natural to suppose that it would have started first on the parts exposed to the paint, i. e. the hands and the face. Also if the patient had a contact dermatitis from any of the ingredients in the paint he should ordinarily have recovered more rapidly than he did when exposure was eliminated, and he should not have had remissions and exacerbations while he was not working and was under treatment. So far as the patch tests are concerned, it is not stated whether a patch test was done with dry pure red lead (Pb_3O_4) or with the paint that the patient called "red lead" or whether the patch test was performed with the dry paint or the wet paint. Wet paint containing a considerable amount of turpentine or turpentine substitute will cause a positive reaction on most persons if left on the skin as a patch test for twenty-four hours; the thinner in most cases is a primary irritant. If the patch test was done with dry paint and a positive reaction was obtained, the pigments, oils and driers must be considered as possible causes of the dermatitis.

It is not believed that the case was one of dermatitis due to systemic lead poisoning, nor is it believed that it was a contact dermatitis due to lead, unless red chromate of lead was the pigment used, and then the dermatitis may have been due to the chrome radical in the compound rather than to the lead radical. Although there have been many cases of dermatitis reported in the literature as due to paint, there have been none attributed to lead poisoning.

No further treatment than that already given can be suggested.

In view of the doubtful diagnosis, no comment can be made as to the value of x-ray, ultraviolet or sodium thiosulfate therapy.

Has a diagnosis of dermatitis exfoliativa (Hebra's disease) been considered?

References on lead poisoning:

Occupation and Health: Part II, Geneva, International Labour Office, 1934.

Morrell, R. S., and de Waele, A.: Industrial Chemistry Series, New York, D. Van Nostrand Company, Inc., 1921.

Hamilton, Alice: Industrial Toxicology, New York, Harper & Brothers, 1934.

Mayers, May R., and McMahon, Minnie M.: Lead Poisoning in Industry and Its Prevention, special bulletin 195, New York State Department of Labor, Division of Industrial Hygiene, 1938.

SO-CALLED BLACK DERMOGRAPHISM FROM GOLD JEWELRY

To the Editor:—I would appreciate information regarding the chemical reaction that causes the precipitation of a black scum whenever a gold wrist band or other jewelry, for example, a neck piece, comes in contact with skin. What can be done to prevent it?

SIDNEY F. LEBAUER, M.D., Greensboro, N. C.

ANSWER.—Endin and Kismenko discussed this phenomenon in 1925, noting that it occurred most often on dry skin smeared with fat and powder. In spite of this pertinent observation, they favored the idea that the phenomenon was another sign of hysteria. Breitman in 1928 thought it dependent on the character of the natural cutaneous lipoids. Jurjew in 1928 reported a case of adiposogenital dystrophy in which stroking the skin with a metal instrument resulted in back stripes. Soon afterward, Hauck and Dietal and Hosp (Hosp, E.: Untersuchungen über die "Schwarze Hautschrift," *Dermat. Wchnschr.* **91**:1895 [Dec. 27] 1930) reported investigations demonstrating that soft metals make more distinct marks than hard ones and that the tendency to respond with black marks is not increased by sweat (actually decreases it), fat or alkalinity or acidity of the skin or by mechanical, chemical, photochemical or thermal changes in the skin. On the other hand, they found that zinc oxide ointment made this black writing with a metal instrument possible on any skin and that the marks consist of fine particles of the metal which have been rubbed off by friction on the zinc oxide and have been quickly oxidized by contact with the air.

After an ordinary bath, enough power still adheres to the skin to produce the phenomenon; but after thorough scrubbing or cleansing with benzine the black marks cannot be produced. Parts below the powdered area, or parts in contact with clothing that has rubbed on the powdered area, are also susceptible to marking because of the transfer of powder. The skin of one who

is not susceptible can be made so by rubbing it with a cloth which has rubbed the skin of a susceptible person. After the application of zinc oxide ointment any skin will show the phenomenon. On live skin the ability to respond with black marks is only temporary, disappearing in a few hours. On the skin of a corpse it remains for a long time, until removed by rubbing or washing. Many substances besides zinc oxide will produce this condition: calcium or barium sulfate, calcium carbonate, white lead, fine salt or fine sand. Coarse powders, such as coarse sand, will not produce it, nor will the various starch powders or talcum powder.

Lead and metals softer than lead will write on clean dry skin. Silver and harder metals require the presence of a fine powder.

The phenomenon has been called black dermographism. Technically correct, it seems advisable to reserve the name dermographism for the ability possessed by some skins to respond with wheal formation to pressure or stroking.

If patients use only talcum or starch powders they will not be annoyed by black marks from the contact of jewelry with the skin. The possibility of face powder containing harder components sifting down onto the chest must not be forgotten, however.

EMPYEMA OF GALLBLADDER

To the Editor:—What are the probabilities for a postoperative hernia following cholecystostomy for empyema of the gallbladder in terms of percentage? Does chronic alcoholism have any influence? If so, what is it? Just how much of a factor is diabetes mellitus, if any, in connection with such a postoperative hernia? What is the incidence of unabsorbed sutures in connection with the operation mentioned? In case of an infected wound from the empyema would an unabsorbed suture cut any figure in the event of a postoperative hernia? M.D., California.

ANSWER.—No figures have been found on the incidence of postoperative hernia following cholecystostomy for empyema of the gallbladder. It is doubtful that chronic alcoholism or diabetes would be a factor in such a case, although infections prosper in the presence of diabetes. An unabsorbed suture would be unlikely to play a part.

The principal difficulty is the virulent infection usually present in an empyema of the gallbladder. The fascia should be sutured with interrupted chromic catgut and not too tightly and ample drainage of the gallbladder should be carried out, every effort being made to prevent infection, at least widespread infection, of the fascia. Despite these measures, postoperative hernia will inevitably occur in a small percentage of cases.

COMPLEX ALKALI VAGINAL DOUCHE

To the Editor:—I would appreciate your opinion of the following formula: sodium bicarbonate 16 ounces, sodium borate 16 ounces, sodium chloride 5 ounces, sodium benzoate 1 ounce, menthol 1 drachm, bordeaux red 8 grains, oil of thuja 1 drachm. I have been using this formula for my gynecologic patients as a general douche for the past three months. Results are satisfactory and patients seem to like it, stating that they feel clean and refreshed after douching. Some patients use it two or three times daily. I should like to know whether prolonged use of this formula can cause any temporary or permanent local or systemic damage. Are the drugs in the formula used in proper proportion? If not please recommend the proper concentrations. In addition, please suggest whether the efficiency of the formula can be improved by omitting or adding different drugs. M.D., New Jersey.

ANSWER.—There is no need for such a complicated douche, particularly because it is no better than most simpler and cheaper douches. In fact this douche may in some cases do harm. Practically all the ingredients in this douche have an alkaline reaction and, as Roblee and Karnaky have shown, alkaline douches may have a bad effect on the cervix and the vagina. In fact Roblee maintains that an alkaline medium in the vagina may result in the formation of "erosions" on the cervix. A simple way to cure such erosions is to maintain an acid medium in the vagina.

Nearly all pathogenic organisms in the vagina, especially the gonococcus and the trichomonas, disappear if the vagina is kept strongly acid. In gonorrheal vulvovaginitis in children, for example, cures can be obtained in nearly all cases by using acid tablets in the vagina. In the cases of vulvovaginitis in which estrogenic substance is used, cures are obtained only in the cases in which the vaginal reaction is acid.

From the foregoing remarks one may conclude that alkaline douches are not only useless except as mechanical cleansers but may actually do harm. Only acid douches should be used. The best substances for douching are lactic acid and vinegar (5 per cent acetic acid). Vinegar is cheaper and somewhat better. If lactic acid is used, one teaspoonful of it should be added to two quarts of warm water. When vinegar is used, four tablespoonfuls should be added to two quarts of warm water.

SULFANILAMIDE AND CONVULSIONS

To the Editor:—A boy aged 19 months and weighing 30 pounds (13.6 Kg.) was given an initial dose of 20 grains (1.3 Gm.) of sulfanilamide (orally) for acute follicular tonsillitis. This condition was present for two days before the administration of the drug, and the temperature varied from 100 to 105.8 F. With the high temperature the child was delirious. On the third day of illness there was no fever. A consultant pediatrician found the tonsils enlarged and reddened. He advised that sulfanilamide be given in the quantity stated. About twenty to thirty minutes after this was done the child uttered a peculiar cry and turned blue, and his extremities became rigid. He immediately became agitated and kept on throwing himself around on a couch. There was no loss of sphincteric control and no biting of the tongue, although the child did grind his teeth and almost presented risus sardonicus. At times he would assume the position of opisthotonos and right after that would throw himself around on the couch. He was given one-eighth grain (0.008 Gm.) of morphine sulfate by hypodermic injection. This helped after about twenty minutes. He was then taken to a hospital, where a spinal tap was performed, because it was thought that cerebrospinal meningitis should be ruled out. The cerebrospinal fluid was under increased pressure, sugar was present, globulin was not increased and there were 6 lymphocytes present. No further tests were done on this fluid. Examination of some catheterized urine was negative. A blood count showed the hemoglobin and red cells to be normal. There were 4,400 white cells, and the differential showed 61 per cent polymorphonuclears, 39 per cent lymphocytes and a shift to the left. The temperature on admission to the hospital was 101 F. The convulsive movements lasted about two hours. After this spinal tap a second pediatrician was called in. At this time the child was asleep or, rather, comatose. The reflexes were all diminished but present. The consultant believed that the convulsions might have been due to the tonsillitis but did mention the possibility of an influenzal meningitis with good prognosis. He also stated that there was a good possibility of this being a case of acute encephalitis. I might add that during the convulsive state the child's eyes would roll backward toward his head and his tongue would be pushed out of his mouth and even deviated to either side. A third pediatrician was then called in and he stated that the convulsions were due to the sulfanilamide. The father of the child suffers from hay fever and bronchial asthma. This consultant admitted never having seen any convulsions due to the administration of the drug. He explained that there was most likely a condition of acidosis present which was brought on by the sulfanilamide. The urine, however, was distinctly alkaline. The infant was given 30 grains (2 Gm.) of sodium bromide rectally and $\frac{1}{250}$ grain (0.0003 Gm.) of atropine sulfate. During the night he was restless and cried often, and his hands would assume athetoid positions while the rest of his extremities were at times rigid. The next day he was a little improved and no longer comatose. He sat up in his crib, asked for water and drank it alone. He had a peculiar facial expression which was dull and vacant. He seemed to be puzzled by everything around him and his eyes had a far away look. It seemed as if he was not in contact with reality. Then again he would become quite normal for a minute or two, speaking distinctly and quite lucidly. During the day while he was no longer comatose the child would still keep on posturing with his hands but to a lesser degree than he had the night before. Forty-eight hours after admission a second tap was performed and now the cerebrospinal fluid was not under increased pressure. There were only 2 cells, sugar was present and the amount of globulin was normal. The fluid was crystal clear in each tap and only about 5 cc. was removed each time. The third day of hospitalization he was still improving mentally and a second blood count showed it to be entirely normal. Sixty hours after the onset of the convulsions a maculopapular eruption developed behind the ears and on the scalp line. It was also present on the thorax. There was no fever and the cutaneous lesions did not appear pruritic. During the day the rash would become quite faint and then reappear. It lasted about twenty-four hours. The tonsils were improved. All told, the child remained in the hospital about four and one-half days and made a complete recovery. The mother states that a similar rash developed at home a few days after this but I was not called to see it. Do you think that the sulfanilamide was the cause of the convulsions? What facts in the history as presented would make you agree or disagree with this as the cause? What is the most likely explanation of the rash? Do you know of any cases in which sulfanilamide per se caused convulsions in human beings?

M.D., New York.

ANSWER.—It does not seem probable that the convulsions were caused by the sulfanilamide in view of the fact that the dosage was small. It would seem more likely that the relationship between the convulsions and the ingestion of sulfanilamide was coincidental, in view of the fact that such a relationship has not been reported despite the widespread use of the drug in recent years, and that the convulsions were associated with the infection in view of the not infrequent occurrence of convulsions with acute infectious diseases in childhood. Furthermore, the eruption can be explained as an accompaniment of the infection, also in view of their frequent occurrence in various febrile states.

The toxic manifestations from the use of sulfanilamide have in most instances resulted from fairly large doses. Among such are dizziness, headaches and mental confusion. The maculopapular eruptions have been noted particularly after exposure to light and it has been suggested that the cutaneous reaction is due to a vasculotoxic effect of porphyrin; some observers have reported abnormally high values in the urine of patients taking sulfanilamide. In the present case no determination was made of the amount of sulfanilamide in the blood, but it must have been at a low level and could probably not account for any of the toxic symptoms that have been associated with the taking

of sulfanilamide. Such laboratory data as the carbon dioxide combining power of the blood, the oxygen saturation and the amount of sulfanilamide would be necessary in order to say whether or not the convulsions were due to an associated acidosis and whether or not the cyanosis was due to the sulfanilamide. So far as is known, there are no reports of convulsions in human beings caused by sulfanilamide.

INCIDENCE OF TRICHINOSIS

To the Editor:—In the January 26 issue of the *Fränkische Tageszeitung* in Germany, I find the amazing statement that 17 millions of Americans are suffering from trichinosis, with a mortality of several thousand in the past year. This was declared by Dr. Nelson, a professor at Rutgers University—according to the German paper—in an address delivered to the health department of New York City. He is also quoted as having said that trichinosis in the United States is one of the most prevalent diseases and that no meat inspection is made in more than 30 per cent of the samples submitted for examination. He is further quoted as having closed his speech with the sentence: "Nothing is done to protect the people, but, nevertheless, they build skyscrapers." In view of the tendency of the German press to spread false news about conditions in the United States, I would appreciate an informative reply to my inquiry. Is there a reliable statistical estimation as to the prevalence of trichinosis?

LEO F. BLEYER, M.D., Elmira, N. Y.

ANSWER.—The information from the German press cited was based on an address given by Thurlow C. Nelson, Ph.D., professor of zoology, Rutgers University, New Brunswick, N. J. The title of the paper given by Professor Nelson was "The Trichina: Public Enemy Number One Among Parasites of the Metropolitan Area." It was presented before a conference of health officers of the New York metropolitan area January 24.

The statement that 17 millions of Americans are suffering from trichinosis was based on extensive postmortem studies that have been carried out in recent years. Because of more refined methods, a large proportion of postmortem material now reveals the presence of Trichinella. Most investigators have used the method of digesting the diaphragms removed at necropsy in artificial gastric juice and of then examining the sediment for larvae. Others have combined with this procedure a microscopic examination of the muscle. The incidence of the disease in terms of percentage of necropsy material containing larvae in various parts of the country is as follows: Rochester, N. Y., 17.15 per cent; Boston, 27.6 per cent; Minneapolis, 17.09 per cent; New Orleans, 3.5 per cent; San Francisco, 24 per cent; Washington, D. C., and Baltimore, 13.67 per cent; Chicago, 14 per cent; St. Louis, 15.37 per cent. A more refined technic used in Cleveland brought the incidence up to 36 per cent. It should be pointed out that in practically all the material examined death was ascribed to some other cause. It is difficult to determine the death rate of trichinosis. If it is based on cases recognized during life, the rate is low. On the basis of the foregoing postmortem observations, it is obvious that many cases of trichinosis are not recognized or properly diagnosed. It is well known to most clinicians that the disease may be easily confused with many other conditions. Furthermore, not all cases present the classic laboratory evidence of eosinophilia. An advance in the diagnosis of trichinosis has been made recently through the utilization of cutaneous and serologic tests. While a study of postmortem material will not give an accurate estimate of the incidence of trichinosis in the population at present, it nevertheless indicates a definite trend and that the disease is much more common than the experience of the average physician would indicate.

The late Dr. M. C. Hall, chief of the division of zoology of the National Institute of Health in Washington, D. C., stated in 1938 that the federal government inspects only about 70 per cent of the meat in this country. It is recognized that the remainder is inadequately inspected. The federal government inspects only the meat of packers who engage in interstate commerce. Even the federal inspection is inadequate, since no practicable provision is made for pork sold which is intended to be cooked; inadequately cooked pork appears to be the source of most cases of trichinosis.

It is of interest that toward the end of the last century Germany prohibited the importation of pork produced in America, because it was the belief that the high incidence of trichinosis in Germany was due to infected meat imported from the United States. The Germans contended that German meat sold in Germany was free from Trichinella because of an elaborate system of microscopic inspection of all pork for larvae. This examination would prevent the sale of trichinous meat; therefore the source of human cases of trichinosis must be due to imported American pork products. The United States instructed Dr. C. W. Stiles in 1898 to determine the value of the German system of pork inspection. His conclusions, after two years' observation, showed that out of 6,329 cases of trichinosis occurring in Germany between 1881 and 1898, 3,388 cases with 132 deaths appeared to have been due to faults of the method of German inspection. There are no reliable statistics on the incidence of trichinosis in Germany at present.

There is no doubt that trichinosis constitutes one of the major public health problems of today. The United States Public Health Service has recognized this, and a number of excellent surveys and recommendations for the control of the disease have been published in the last two years. For further information concerning this subject, the following publications of the United States Public Health Service are recommended:

Hall, M. C., and Collins, B. J.: Studies on Trichinosis: I. The Incidence of Trichinosis as Indicated by Postmortem Examination of 300 Diaphragms, *Pub. Health Rep.* **52**: 468 (April 16) 1937.

Hall, M. C.: III. The Complex Clinical Picture of Trichinosis and the Diagnosis of the Disease, *ibid.* **52**:539 (April 30) 1937.

Hall, M. C.: VII. The Past and Present Status of Trichinosis in the United States, and the Indicated Control Measures, *ibid.* **53**: 1472 (Aug. 19) 1938.

Hall, M. C.: The Role of the Garbage-Fed Hog in the Production of Human Trichinosis, *ibid.* **52**: 873 (July 2) 1937.

TOE NAILS

To the Editor:—A girl aged 17, active, well nourished, healthy, vigorous and athletic, now in her third year at high school, bruised her right big toe in a basketball contest three weeks previous to my seeing her. Some two or three weeks following this the nail in this toe has become lifeless looking in appearance—a light grayish nail in good position, not distorted in growth (of dark egg shell appearance), which can be cut from above down or probed without pain. The tissue surrounding both toes is healthy and normal in appearance. There is no apparent inflammation or pus. The big toe on the other foot is likewise involved. The egg shell nail, which is associated with hyperhidrosis, has been thought of and certain debilitating diseases, but the patient evidences no such history. All the other toes are perfectly normal in appearance and growth.

M.D., New York.

ANSWER.—The egg shell nail, described first by J. N. Hyde (The Egg Shell Nail, *J. Cutan. Dis.* **24**:145, 1906) is a thin nail, white with a purplish tinge, uptilted at the free border. It is part of the picture of erythrocyanosis of the extremities associated with hyperhidrosis, the whole dependent, in all probability, on some disturbance of the endocrine glands. It is seen most frequently in young girls.

The case under discussion lacks all these criteria except change of color. Injury is untenable as a cause, for there has been no evidence of subungual hemorrhage and the symmetry of the change of color requires the assumption of an unlikely coincidence of injury also to the other big toe.

Primary discoloration of the nails is rare, resulting, according to Heller, the leading authority on diseases of the nails (*Handb. d. Haut- u. Geschlechtskrankh.*, Berlin, Julius Springer **13**:131 [part 2] 1927), from icterus, hemorrhages due to general causes, racial pigmentary peculiarities, pigmented nevi, psoriasis or endocrine disorders. Only the last two can be considered in the present case.

Addison's disease and hyperthyroidism cause change of color of the nails and it is possible that slighter endocrine disturbances may be found sufficient. Rarely psoriasis makes its initial appearance as a discoloration of the nails with thickening, followed by the thimble-like pitting, cross furrows, irregular depressions or partial separation of the nails at the free border or the sides seen so often in psoriasis. None of these changes in the nail are diagnostic, however, and only after the appearance of ordinary cutaneous lesions can the diagnosis be settled.

Loss of translucence of the nails can be secondary to anemia, particularly chlorosis, angiospasms, polycythemia, icterus and pigmentary diseases, all of which can be ruled out easily in the present case. Thickening of the nail plate or increase of the subungual horny layer may destroy the translucence. A growth of monilia or other fungus could produce the same result. Here again the difficulty is in explaining how the two big toes and no others became infected simultaneously. Scrapings from under the free border of the nail, examined in solution of potassium hydroxide, or cultures on Sabouraud's maltose agar, are indicated.

If a dressing of mercury solution was applied to the toe after the injury, the change of color of that nail can be explained; this leaves the same difficulty of explaining the corresponding alteration in the nail on the left big toe. Such a discoloration has been discussed by J. L. Callaway (Transient Discoloration of the Nails Due to Mercury Bichloride, *Arch. Dermat. & Syph.* **36**:62 [July] 1937). It is seen frequently after treatment of infections about the nails with mercury solutions or white precipitate ointment and is due to an impregnation of the nail with mercuric sulfate, which seems to be precipitated by light.

Slight changes in the nails seldom furnish much help in diagnosis. They must be considered in the light of other signs and symptoms.

POSSIBLE EPILEPTIC EQUIVALENT

To the Editor:—A white unmarried woman aged about 26, whose general physical examination is negative except for a rather low systolic blood pressure and chronic deafness, complains of "spells" which have been present for the past ten years and are gradually growing more severe, especially during the past few months. The "spells" consist of a clouding of consciousness, at which times she is unable to concentrate mentally and is not aware of what she is doing. In general they are much like conditions found in diabetic patients with hypoglycemia, the chief difference being that the spells are of short duration (from a few minutes to a half hour) and end spontaneously without treatment. She has never had a complete loss of consciousness, anything resembling a convulsive seizure, and the spells are not followed by headache or other symptoms. There has been no epilepsy or other nervous disorders in the patient's family. The following blood sugar tests have been made: Nov. 2, 1938, 87 mg. of sugar per hundred cubic centimeters of whole blood, shortly after an attack; November 14, 83 mg. also shortly following an attack; November 16, 97 mg. taken before breakfast while she was on her usual diet and on a day when she did not have a spell. She was hospitalized December 16, at which time the fasting blood sugar was 75.5 mg. One hour after her usual breakfast it was 66.3 mg. Two hours after breakfast it was 106.4 mg. One hour after her noon meal it was 97.6. Two hours after her noon meal it was 97.0. Three hours after it was 96.1. She was then placed on a low carbohydrate diet and the following morning one hour after breakfast the blood sugar was 115 mg. One hour after the noon meal it was 129 mg. The following morning she was given 90 Gm. of dextrose, with considerable water before breakfast. One-half hour later the blood sugar was 70.2 mg., one hour later 65.6 mg. and one and one-half hours later 69.4 mg. That day she had her regular noon meal and about three hours later had one of her "spells." The blood sugar test taken just as she was recovering from it showed 96.6 mg. Because she is alone most of the time it has been impossible to obtain a blood specimen at the beginning of or during an attack. The attacks are becoming more and more frequent and interfere with her work. This brings up the question as to what would be the most advisable course to follow in her case. I notice in the recent literature that some small doses of insulin frequently are a great deal of help in simple chronic hypoglycemia. I am wondering, however, if in this case the trouble might be associated with a tumor of the islands of Langerhans and if an exploratory laparotomy might be advisable. There was no sugar in the urine following the 90 Gm. of dextrose by mouth.

M.D., Wisconsin.

ANSWER.—The patient has been well studied as regards blood sugar and sugar tolerance but these laboratory data all seem to indicate that there is no remarkable disturbance in this sphere. It is unusual to see convulsive seizures due to hypoglycemia unless the blood sugar level falls below 40 or 50 mg. per hundred cubic centimeters. The attacks described might well be epileptic equivalents with clouding of consciousness. It might be helpful to test the patient for carotid sinus hypersensitivity. If this proves to be normal, studies of the cerebrospinal fluid should be made with measurement of the cerebrospinal fluid pressure. In addition roentgenograms of the skull would be helpful and finally electro-encephalographic or air encephalographic studies might be done. All these tests would help rule out some intracranial causes of epileptic seizures. It would not seem advisable to recommend exploratory laparotomy in view of the available blood sugar studies, which do not definitely indicate that there is hyperinsulinism present. A simple therapeutic test would be the administration of large amounts of dextrose daily. Also sedative medication with from 0.016 to 0.03 Gm. (one-fourth to one-half grain) of phenobarbital twice or three times a day should be tried alone or together with small doses of ephedrine sulfate 0.024 Gm. (three-eighths grain) twice a day.

PETIT MAL, PYKNOLEPSY OR FRÖHLICH SYNDROME

To the Editor:—A boy aged 14, in the fifth grade, has been having attacks which apparently are petit mal. He is rather obese, being about 6 inches shorter than is normal at his age. His external genitalia are those of a 6 year old. Evidently this is a case of pyknolepsy. What is the differential diagnosis? What further studies would you suggest? What treatment would you advise? I am planning to make a sugar tolerance test and have x-ray studies done of the head, thinking of course that there might be some disturbance of the pituitary gland. Is any type of glandular therapy indicated?

M.D., Connecticut.

ANSWER.—If this patient has petit mal epilepsy, it is doubtful that there is any relationship between the petit mal and the glandular deficiency. The brief description of the physical characteristics suggests a possible Fröhlich's syndrome. However, one would need much more information to make a diagnosis. If the condition proves to be a pituitary gland deficiency, treatment might be attempted with one of the new preparations obtained from the anterior lobe of the pituitary gland. However, before beginning treatment it is advisable to explain to the parents that the treatment is a long and fairly expensive procedure which will require two or three injections a week for six months or a year before results may be obtained. It is possible even then that there will be no results from treatment. If there are, these results will be revealed in a change in the physical characteristics of the child.

Pyknolepsy, as described by Stahrgardt, is a form of epilepsy characterized by petit mal seizures which begin some time between 8 and 10 years of age and disappear spontaneously at puberty. This condition is not affected by any treatment whatever. The diagnosis is confirmed only when the seizures stop at puberty. There are only two forms of treatment which affect the petit mal of idiopathic epilepsy. Those treatments are fasting and the ketogenic diet. Petit mal epilepsy does not respond to any drug treatment.

It would be advisable to take roentgenograms of the wrists and compare the bone age or development with the Todd standards. This will give information as to the state of metabolism of the child. Apparently there is need for an anterior pituitary male sex hormone. A dextrose tolerance test will show an increased tolerance in pituitary deficiency. More complete information would allow a more intelligent diagnosis and schedule of treatment.

"FEBRILE ANTIGENS" FOR DIAGNOSIS

To the Editor:—Lately my associates and I have been using a product of the Lederle Laboratories, New York, for our Widal tests, known as the Typhoid Group Antigens. A number of physicians on our staff have questioned the reliability of the test and I would appreciate any information that you would send me concerning this product.

M.D., Pennsylvania.

ANSWER.—The preparations formerly called "Typhoid Group Antigens," now called "Febrile Antigens, Lederle," consist of suspensions of members of the typhoid (O and H elements) paratyphoid A and B group, for the performance of the agglutination test for infections of the ordinary enteric types to be utilized in a slide test. They should give results approximately equivalent to those obtained by other methods, probably somewhat less accurate so far as concerns exact titrations.

The "Febrile Antigens" package now also contains Proteus antigen for the test for typhus fever and other members of the typhus group and Brucella antigen for the test for undulant fever (brucellosis).

Of course all such tests must be interpreted in the light of other factors and must not be depended on, of themselves, to establish a diagnosis.

SOAPS FOR WASHING DIAPERS—MEASLES WITHOUT EXANTHEM

To the Editor:—1. Will you give me a list of some of the more popular soaps which, if used to wash diapers, are not so strong as to cause a diaper rash in most babies, and also a list of the soaps which may cause irritation when so used? 2. Can a diagnosis of measles be made without the appearance of a rash? I recently saw a 17 months old baby who had been feverish and irritable and vomited repeatedly for twenty-four hours. The buccal membranes were full of Koplik spots, and, since his sister had broken out with the measles only two days previously, I thought he was also getting the measles. However, he became afebrile and was well in two days, and no rash appeared. Could it have been atypical measles?

M.D., California.

ANSWER.—1. If the diapers are properly washed, no soap should remain in them to irritate the baby's skin and cause a diaper rash, no matter what soap is used. The diapers should be washed first in soapy water, rinsed thoroughly in clean warm water, boiled in clear water for ten minutes and then again rinsed thoroughly in clean warm water. To differentiate between nonirritating and irritating soaps, any soap that can be used to bathe the baby without irritating the skin could certainly be used to wash diapers.

2. If the physician is certain that the buccal membranes were full of Koplik spots, the case undoubtedly was one of measles. Especially during epidemics, attenuated or atypical cases of measles occur in which the rash is so slight and transient that it may be undetected at the particular time of the examination.

TREATMENT OF PARKINSON'S DISEASE

To the Editor:—Please describe the latest treatment for Parkinson's disease.

S. H. RAYMOND, M.D., Cazenovia, N. Y.

ANSWER.—There have been no noteworthy recent advances in the treatment of Parkinson's disease. The most valuable agents seem to be those of the atropine group. Treatment with scopolamine seems to be as efficient as anything that has been used. Good results have been reported both with the tincture of stramonium and with a well assayed product of Datura leaves. It has also been found that atropine sulfate itself, given in increasing doses of from $\frac{1}{250}$ to $\frac{1}{50}$ grain (0.25 to 1.3 mg.) three times a day, has had a beneficial influence, especially in the encephalitic forms. More recently cobra venom has been used (Gayle, R. F., Jr., and Williams, J. N.: *South. M. J.* **31**:188 [Feb.] 1938).

DIGITALIS IN HEART FAILURE

To the Editor:—The use of one of the most used drugs, digitalis, at times puzzles me greatly. 1. Some lecturers in postgraduate institutions say that digitalis should be used to its full therapeutic effect at the first signs of heart failure, i. e., shortness of breath on exertion with or without cardiac irregularity, and with or without demonstrable edema either pulmonary or swelling of the ankles. In cases such as this, if the examiner feels definitely that the shortness of breath is cardiac, should digitalis be used to its full therapeutic effect? 2. Cases such as the following are not infrequently seen. An individual in middle life has had a coronary thrombosis or some other acute cardiac episode. Within several months there is gain in weight, shortness of breath, pulmonary edema, a heart rate from 90 to 100 usually regular, and there may or may not be enlargement of the heart. The use of aminophylline and mercurial diuretics is necessary. A particular case I have in mind is a person who with the use of mercurial diuretics puts out between 136 and 172 ounces of urine following each injection. Should digitalis be used in its full therapeutic effect in a case such as this?

M.D., New York.

ANSWER.—1. Digitalis should be administered to get full therapeutic dosage, slowly or rapidly as the need indicates, at the first sign of heart failure, whether the evidence is pulmonary or systemic. It sometimes can be used as a therapeutic diagnostic test.

2. With respect to the example cited of the middle-aged patient with left ventricular failure and normal rhythm, digitalis is just as much indicated as in any other case of heart failure. It may not be quite so effective as when there is auricular fibrillation, but nevertheless it should be used in full, even before diuretics. It may often, together with rest, be so effective that diuretics are not needed.

TREATMENT OF PAINFUL VACCINATION SCAR

To the Editor:—A white girl aged 16 years consulted me about a smallpox vaccination scar, one year old. The scar is one-half inch in diameter and raised one-eighth inch above the surrounding skin. She plays basketball and when the scar is bumped it becomes painfully itchy. Would there likely be a return of scar tissue if this scar was excised about one-eighth inch beyond its borders? What would be the simplest and best treatment? Would quick, brief freezing with "dry ice" be feasible?

M.D., Washington.

ANSWER.—The simplest and best treatment of this old vaccination scar would be a delicate excision with a minimum of trauma and close coaptation of the skin edges with a subcuticular stitch and follow up with roentgen therapy to the incision to prevent the recurrence of keloid. "Quick, brief freezing with dry ice" is not a satisfactory procedure in the treatment of old thick keloids. In view of the fact that the scar is painful and itchy at times it would be well to examine it microscopically, after excision, to rule out the existence of a cutaneous neuroma.

ARTIFICIAL APPENDAGE FOR LOSS OF FINGERS

To the Editor:—A right handed farmer, aged 50, has lost the digits, save the thumb, of the right hand. The line of cleavage is diagonally from the first metacarpophalangeal joint across to the middle of the fifth metacarpal. What type of artificial appendage would be the most useful to this man in his work? Appearance is decidedly secondary.

BENJAMIN CARLSON, M.D., Lorain, Ohio.

ANSWER.—The most useful type of artificial aid to function would consist essentially of a prosthesis of firm leather which could be strapped or laced to the hand and wrist and to which is attached a broad, semiflexed metal finger, in the position of the middle and ring fingers, to the tip of which the patient could firmly approximate the thumb.

A simple apparatus is far more likely to prove useful than a complicated one; and what this patient needs most is something that will permit him to grasp objects with the help of the prosthesis and the remaining thumb.

ACID-ASH DIET

To the Editor:—A question with regard to the "acid-ash diet": Why is salt contraindicated? Send me, or refer me to, an acceptable acid-ash diet list.

M.D., Texas.

ANSWER.—Diets providing an acid ash are sometimes used in the dietary treatment of renal diseases, particularly when the condition is associated with edema. As a rule, dietary treatment is not sufficient but is supplemented by the administration of acidifying salts such as ammonium chloride. Foods which provide an acid ash are cereals, including bread and other cereal products, meats, eggs and fish.

Discussions of acid-ash diets with information about foods can be obtained from almost any standard textbook on nutrition. Salt is contraindicated. It may be easily retained and thus lead to an accumulation of edema fluid, for the elemination of which the acid-ash diet usually is given. It is customary to substitute salt-free butter for ordinary butter and otherwise to avoid excessive ingestion of table salt.

SPONTANEOUS RUPTURE OF MEMBRANES NEAR TERM

To the Editor:—If the membranes rupture, allowing the amniotic fluid to escape during the last month of pregnancy, is it always advisable to induce labor promptly?

M.D., California.

ANSWER.—Labor should usually be induced in patients in whom the membranes rupture near term. A latent interval usually follows the rupture of the membranes until contractions commence. It is therefore best to wait as long as twelve hours before an induction is undertaken, if indicated, in order to allow a possible spontaneous onset of labor to take place and to assure the best response to the induction. It may be difficult to determine definitely that the membranes have actually ruptured. If this is questionable, nothing should be done. The danger of prolonged rupture of the membranes is infection. Although intra-uterine infection occurs but rarely in such cases, it is always a serious complication.

FIBRIN IN AMNIOTIC CAVITY

To the Editor:—During 1937 I delivered a 21 year old primipara by low forceps and episiotomy and she had a normal puerperium. In May 1938 she returned with amenorrhea, vaginal pruritus and an enlarged uterine fundus. June 4 she had severe abdominal cramps and profuse vaginal bleeding with clots, which continued off and on for two and one-half weeks. A miscarriage was agreed on but no tissue was passed. June 28, reexamination revealed a white flaky discharge and she was started on silver picrate insufflation and suppositories and two weeks later the fundus was still enlarging. She continued a normal pregnancy and delivered a normal male infant November 22, weighing 6 pounds 5 ounces (2,863 Gm.). There were no lacerations and the membranes were ruptured just before the delivery of the head with the escape of a moderate amount of crystal clear water. The placenta was delivered after the baby and was inverted as it presented with two thirds of the inner surface of the membranes covered with a layer of fibrin from one-eighth to one-fourth inch in thickness. There was no laceration of the placenta, cord or baby. The maternal surface of the placenta was apparently normal. My impression is that there was bleeding into the amniotic cavity in June, which resulted in the deposit of fibrin. Is this a frequent occurrence?

M.D., Kentucky.

ANSWER.—It is difficult to explain a deposit of fibrin within the amniotic cavity. This would have to result from bleeding from the cord or the fetus. Fibrin deposits such as the one described are often found extra-amniotically, so that the amnion in this area is considerably thickened. These represent hemorrhage and organization of the blood clots. The hemorrhage may occur early in pregnancy in association with a threatened abortion or late in pregnancy as the result of changes incident to placenta praevia. Microscopic examination of such an area will reveal the organized blood clot.

CONTRALATERAL PHLEBITIS YEARS AFTER INJURY

To the Editor:—A patient was shot with shrapnel in the right leg during the World War and has since suffered with atrophy and severe pain in this member. Since he is forced to favor his right leg in walking or working, a phlebitis has developed in his left leg. In 1916, about two years before his entry into the service, he suffered an attack of typhoid. The phlebitis that now exists in the left leg began only five or six years ago. Now the question is whether or not the phlebitis was produced by the attack of typhoid over fifteen years previous to its onset or could be caused by the gunshot wound in the right leg, which has forced him to use the injured leg a great deal more than he would normally. I have talked this matter over with the rating board of the Veterans Administration and was informed that this particular combination had never been submitted before. If possible I wish that you would let me know if it is possible for a gunshot wound which produced a compound fracture in the right leg to cause a phlebitis in the opposite leg.

STANLEY M. GATES, M.D., Monticello, Ark.

ANSWER.—More data are necessary to form an opinion. One would have to know whether there were any clinical symptoms and signs of venous obstruction during or immediately after the attack of typhoid. It is not likely that the patient had a residual phlebitis on entering military service, as this would have disqualified the patient for service at the front. Another question that arises is whether or not a phlebitis followed the leg injury within a few weeks. In the absence of such evidence, a phlebitis occurring sixteen years after typhoid or fourteen years after a gunshot wound, without any "bridging symptoms," cannot be admitted as having any causal relationship either to the infection or to the injury.

The term "bridging symptoms" is meant to indicate that a phlebitis can be due and can appear in the form of recurrences

as long as twenty-five years after an injury, but the initial attack must be demonstrable and also the recurrences at intervals. The idea that favoring the right leg can bring about a phlebitis in the left leg, again, cannot be substantiated, unless there is good evidence that a femoral or pelvic phlebitis existed at the time of the injury. Otherwise every major amputation would be followed by phlebitis in the other limb, and this certainly is not the case.

In deciding on the merits of such a case, much would depend on the ability to demonstrate the existence of a phlebitis within a few weeks after the infection or injury.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 20-22. Sec., Dr. J. N. Baker, 517 Dexter Ave., Montgomery.

ARKANSAS: *Medical (Regular).* Little Rock, June 8-9. Sec., State Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, 317 State Line, Texarkana. *Medical (Eclectic).* Little Rock, June 8-9. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock. *Basic Science.* Little Rock, May 22. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock.

CALIFORNIA: *Written examinations.* San Francisco, July 10-13, and Sacramento, Oct. 16-19. *Oral examinations* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), Los Angeles, August 7, and San Francisco, Nov. 15. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Basic Science.* New Haven, June 10. *Prerequisite to license examination.* Address State Board of Healing Arts, 1895 Yale Station, New Haven.

DELAWARE: Dover, July 11-13. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: *Basic Science.* Washington, June 26-27. *Medical.* Washington, July 10-11. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Jacksonville, June 19-20. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, June. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

ILLINOIS: Chicago, June 20-22, and Oct. 17-19. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 20-22. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

KANSAS: Kansas City, June 13-14. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Louisville, June 7-9. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

MARYLAND: *Medical (Regular).* Baltimore, June 20-23. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Medical (Homeopathic).* Baltimore, June 20-21. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MICHIGAN: Ann Arbor and Detroit, June 14-16. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 100 W. Allegan St., Lansing.

MISSISSIPPI: Jackson, June 21-22. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MISSOURI: St. Louis, June 1-3. Sec., State Board of Health, Dr. Harry F. Parker, State Capitol Bldg., Jefferson City.

NEBRASKA: *Basic Science.* Omaha, May 2-3. *Medical.* Omaha, June 8-9. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, May 1-3. Sec., Dr. John E. Worden, Capitol Bldg., Carson City.

NEW JERSEY: Trenton, June 20-21. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW YORK: Albany, Buffalo, New York, and Syracuse, June. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Building, State Education Department, Albany.

NORTH CAROLINA: Raleigh, June 19. Sec., Dr. William D. James, The Hamlet Hospital, Hamlet.

NORTH DAKOTA: Grand Forks, July 5-8. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OHIO: Columbus, June 6-9. Sec., State Medical Board, Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: *Basic Science.* Oklahoma City, May 15. Sec. of State, Hon. C. C. Childress, State Capitol, Oklahoma City. *Medical.* Oklahoma City, June 14. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: *Medical.* Portland, June 20-22. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland. *Basic Science.* Corvallis, July 8, and Portland, Oct. 28. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PENNSYLVANIA: Philadelphia and Pittsburgh, July. Sec., Board of Medical Education and Licensure, Dr. James A. Newpher, 400 Education Bldg., Harrisburg.

SOUTH CAROLINA: Columbia, June 27. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Rapid City, July 18-19. Director, Medical Licensure, Dr. G. J. Van Heuvelen, State Board of Health, Pierre.

TEXAS: Austin, June 21-23. Sec., Dr. T. J. Crowe, 918 Mercantile Bldg., Dallas.

VERMONT: Burlington, June 14-16. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, June 21-23. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WISCONSIN: *Basic Science.* Milwaukee, June 3. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical.* Milwaukee, June 27-30. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL, April 22, page 1627.

Book Notices

Spinal Anesthesia. By Louis H. Maxson, A.B., M.D., Practicing Specialist in Anesthetics. Foreword by W. Wayne Babcock, M.D., LL.D., F.A.C.S., Professor of Surgery, Temple University School of Medicine, Philadelphia. Cloth. Price, $6.50. Pp. 409, with 70 illustrations. Philadelphia, New York, Montreal & London: J. B. Lippincott Company, 1938.

"The writer, being large, middle aged and bald, can hardly qualify as an 'auburn-haired vamp,' but he feels that the spinal anesthetic patient should preferably be watched by a well trained medical man who is qualified personally to administer any treatment or restorative measures that may be called for." One has the impression on reading Dr. Maxson's book that he is indeed reading the words of a well trained medical man who is qualified and who, moreover, has his feet on the ground in a controversy that has waxed warm during the past ten years. The book is definitely on the side of spinal anesthesia. The protagonist is an anesthetist but the book is not controversial. Dr. Maxson goes out of his way to meet all comers but not for the purpose of blasting them into an admission of their errors. He introduces the reader to them in their own words and if he disagrees with them he says so; yet the background of his reasoning has been so painstakingly set forth that the reader understands why he disagrees and is likely to concur. He has correlated the results of present and past clinical and experimental work intelligently, accurately and impartially, thus fulfilling a long felt need. It is this painstaking and thoughtful consideration of the known facts regarding the basis of spinal anesthesia that makes the book worth reading and keeping as a reference work.

Following a foreword by Dr. W. Wayne Babcock, "to whom spinal anesthesia in this country owes a great debt of gratitude," there is a sane preface by the author, in which it is stated that "the entire purpose of this presentation of the subject is to help the reader understand the 'why' of each procedure, and with such understanding to enable him to evolve a technic of his own, properly grounded on scientific principles." This he proceeds to do successfully. The book is not a compilation of the author's cases. First there are an explanation of the definitions and synonyms used and a brief and accurate history of the method. A chapter of careful and practical discussion of anatomic considerations follows. There is in this chapter a detailed account of the spinal and autonomic nervous systems which is of paramount importance and is referred to again and again in the text because the bulk of clinical and experimental evidence adduced indicates that fall in blood pressure, respiratory embarrassment or failure and cardiac insufficiency are truly the effects of the anesthetic drug on cord structures and their autonomic counterparts. The selectivity of most anesthetic agents is on sensory components predominantly in the concentrations ordinarily used. Most of the untoward events therefore are the results of gravitation of the anesthetic to nerve roots controlling the muscles of respiration, the sympathetic acceleration of the heart and the peripheral nervous vasomotor control. The physical factors in the administration of spinal anesthetics are reviewed, as are the actions of drugs that have been or are being employed as anesthetic agents for premedication and stimulation during anesthesia. A discussion of technical considerations is followed by the recording of specimen technics. These include all the well known methods. The author has no particular ax to grind and does not give the impression that he has any interest in wanting to persuade the reader to adopt his technic (which in fact is similar to that used by many other operators).

The effects of anesthesia are dealt with, and here the earlier experimental and clinical groundwork is repeatedly referred to in the explanation of the phenomena observed during and after anesthesia. The cause of failures is (again) shown to be failure to deposit the anesthetic in the subarachnoid space in the vast majority of cases, although hyposensitivity to ordinary concentrations is thought to be a rare cause. Difficulties of administration and dangers to be watched for are described and the causes of death analyzed. Maxson is certain that, when handled by a well qualified anesthetist, spinal anesthesia is "as safe as any method can be." One believes him when he states that it would be his own choice had he to undergo an abdominal operation.

There is obvious sincerity about the book, and one gathers that the same might be said about the author. He records his own deaths in detail and gives all the mortality statistics which have been reported since 1915, making the point that most deaths have occurred early in the given series. Complications and sequelae, advantages and disadvantages, indications and contraindications are thoroughly considered, so that one may find almost any specific condition discussed from the standpoint of risk. The author considers spinal anesthesia to be of value at times as an aid in diagnosis (although not all surgeons will be willing to agree that it should be used to differentiate mechanical from paralytic ileus), as a therapeutic agent in certain conditions and as an anesthetic agent in some special situations, such as childbirth. The application of the method in the surgical treatment of children and infants is discussed, the author's point of view being that it may have a use with older children but probably not under any ordinary circumstances with infants. In the same chapter preoperative and postoperative care of patients who have had a spinal anesthetic is presented. Total spinal anesthesia is discussed, chiefly for the purpose of warning against its dangers and by way of illustrating the selectivity of the drugs used for sensory nerves. Segmental spinal anesthesia is thought to have promising possibilities. The book closes with a brief chapter of conclusions, the first part of which might fittingly have introduced the treatise. In it the spirit in which the book was written is indicated by the statement that "the writer of this book is not an extremist in his attitude toward spinal anesthesia. He cannot share the high enthusiasm of a Pitken, a Koster or a Vehrs. . . . No; the writer is an anesthetist, and as such he recognizes that no single method of anesthesia can properly claim precedence and be used to the exclusion of the others."

There are an extensive bibliography and a name and cross reference subject index. The contents are made easily available by outlines under the headings of each chapter. There is considerable repetitious presentation of material in the book, but this is not objectionable, since each chapter is dealt with as a unit. It should be pointed out that if all those who administer spinal anesthetics had the knowledge contained in this book and understood how to apply it, spinal anesthesia would never fall into disrepute but would have an honored place in the practice of surgery until the advent of the perfect anesthetic.

Der Beginn der Lungentuberkulose beim Erwachsenen. Untersuchungen an 86 Reihen von Röntgenphotographien vom Gesunden bis zum Krankhaften über Ursache, Gestalt, Entwicklungstempo, therapeutische Beeinflussbarkeit und Prognose der Erkrankung. Von Dr. H. Braeuning, Chefarzt der Fürsorgestelle für Lungenkranke in Stettin. Paper. Price, 22 marks. Pp. 222, with 177 illustrations and graphs. Leipzig: Georg Thieme, 1938.

This excellent monograph is printed on the best glazed paper and is well illustrated with roentgenograms and charts. There are a few minor typographic errors: some of the tables (for example, table 3) have duplication, figures do not total, and reference figures in the text are not exact. On page 180 for table 17 undoubtedly table 18 is meant. The use of flat plates also has the disadvantage of not locating lesions by third dimension and requires a careful regulation of the relationship of position of the x-ray tube to the position of each patient.

The work is the result of a study of 100,000 persons, of whom there were 80,000 roentgenograms from the various tuberculosis institutions of Stettin. Of this number only eighty-six cases were included in the report in which roentgenograms were taken in series of apparently well persons and the disease was observed from the inception as determined by the least possible changes on the roentgenograms. The periods from the last normal to the first one showing pathologic change varied from one month to one year. The important features of the course of the disease of each of these eighty-six patients is briefly recorded, accompanied by an excellent course chart of each and punctuated by well chosen roentgenograms of total or important lung regions. There are eighty-five of such reproductions. In this series the author's dictum of "anything can happen" is well shown, for there are many degrees of acuity and chronicity. Some cases presenting open infiltrates or other serious appearance heal spontaneously, others like them or of even better appearance may go on to a fatal issue even with treatment. The first appearance, therefore, is not always a good criterion of prognosis.

Fifteen per cent of the cases became open within the first year, 5 per cent more after the second year, 4 per cent more after the third, and 8 per cent more after the fourth. After twelve years 40 per cent were open. Three and five tenths per cent of the patients were dead after one year and 15 per cent after twelve years. Both of these figures are established on an average time of observation of about four years. Sixty per cent therefore became severely damaged for years, 40 per cent infectious and 15 per cent died. If they had been followed longer the results would perhaps be much higher. Judging by the author's earlier work, about 80 per cent of patients with open tuberculosis ultimately die of the disease, although this is subject to rigid interpretation of what constitutes an open lesion and also the kind and time of treatment. Truly, as the author states, tuberculosis in adults, for those who know its course, has not yet lost its terror. The blood picture is indefinite, as is the red cell sedimentation. Neither is specific. Practically all acute forms show changes of both, some chronic forms show changes of neither.

The high point of this work lies in the report on the early lesion from a roentgenologic standpoint with the collateral clinical observations.

The preponderance of lesions were infiltrates: twenty-six typical, thirty-four atypical or modified in some way, twelve having mixed flecks in cloudy infiltrates and others having fine flecks with or without linear fibrosis. They were located largely above the second rib: eighteen in the apex, six behind the clavicle, twenty in the first, five in the second intercostal space and one in the third. The others were widespread or irregular in position.

Other diseases could not be connected as causative factors in the beginning of tuberculosis. Grip and the acute onset of tuberculosis are quite similar and may be simultaneous or independent of each other. A differential diagnosis is suggested in the high sedimentation of grip in contrast to tuberculosis.

The author doubts whether pregnancy has any unfavorable effect on the course of beginning tuberculosis, but the figures are too few to justify conclusions. Most figures of pregnancy and tuberculosis are compiled on cases in which the disease is actually in progress.

In puberty there is a slight increase of unfavorable results in the group from 10 to 20 years of age over the adults (50 per cent to 34 per cent respectively), but most puberty cases show a youthful glow even in advanced disease.

The origin of the disease is assumed to be largely from exogenous reinfection. Only three cases were definitely proved to be from a primary focus of thirty-six definite primary lesions. Three others were from the hematogenous scattering of the primary, but the author prudently admits that many such cases may have been overlooked and grants that pathologic studies similar to those of Wurm may change the figures. Important argument in favor of exogenous reinfection, however, is that seven times as many nurses in tuberculous cases develop the disease as those working in welfare stations. This is of more significance since all their nurses reacted positively to tuberculin at the beginning of service.

This work comes near to the ideal "experiment" in the epidemiology of tuberculosis.

The 1938 Year Book of Physical Therapy. Edited by Richard Kovács, M.D., Clinical Professor and Director of Physical Therapy, New York Polyclinic Medical School and Hospital, New York. Cloth. Price, $2.50. Pp. 486, with 131 illustrations. Chicago: Year Book Publishers, Inc., 1938.

This is the initial yearbook of physical therapy, aimed to serve the large body of medical men and their assistants in the use of physical energies in almost every field of medical practice. The editor states that he was attempting to meet "the constantly increasing, and in many respects spectacular, development of physical energies in the treatment of disease and injury during recent years." He says further that he wished to cover three main fields in physical therapy, namely (1) new developments in basic research and practical application, (2) the present status of clinical usage and (3) the types of treatments largely unknown in this country, in order to stimulate interest and

research along such lines as health resorts and spas, the use of natural therapeutic resources and climatotherapy, and physical education in the practice of medicine.

The book has two parts, one on the methods and apparatus of physical therapy, including some rather detailed accounts of the work of various investigators on the effects of physical methods, with some of the physiology and physics involved, and another on applied physical therapy in the treatment of a wide variety of physical conditions. The editor stressed the necessity of using physical therapy in conjunction with general medicine and surgery. In covering these fields, the literature referred to was limited to that of the preceding year, as is customary in yearbooks. In selecting articles from the foreign literature, the editor said that difficulty arose because of the lack of internationally accepted nomenclature, involving a problem which should be considered in future international congresses on physical therapy.

Dr. Kovács is the editor, yet it is sometimes uncertain which statements are his and which those of the investigators cited. Such objective comments are made as "the experiments proved that" and "the discussion is theoretical" and that certain experiments "have demonstrated." Yet comments signed by the editor are often placed in parenthesis and small print in the text, causing confusion as to which statements in the rest of the text are his and which those of the investigators cited.

On the whole the book represents a good start for a yearbook on physical therapy, and it will be valuable for its abstracts of recent literature.

Cardiovascular Disease in General Practice. By Terence East, M.A., D.M., F.R.C.P., Physician and Physician-in-Charge of Cardiological Department, King's College Hospital, London. Cloth. Price, 10s. 6d. Pp. 206, with 43 illustrations. London: H. K. Lewis & Co., Ltd., 1938.

This book it intended to expound to the general practitioner those principles and practices which are of immediate utility to him in his everyday handling of cardiac patients. In this the author succeeds admirably. Function and etiology are emphasized in preference to morphology; this is in line with the modern trend in the field of cardiovascular diseases. The scope of the book can be appreciated by a glance at the chapter headings: interpretation of symptoms, physical examination, heart failure and its treatment, coronary circulatory failure, peripheral circulatory failure, rheumatic and syphilitic cardiovascular disease, chronic valvular diseases, subacute endocarditis, pericarditis, hypertension, arrhythmias, circulation in anemia, in lung and kidney disease, in anesthesia, in pregnancy and in athletes, congenital heart disease, diseases of the arteries and veins, the heart in older persons, and aberrations of the normal heart. The book avoids the undue emphasis on chronic valvular disease which has been so common in the past by covering the subject in three pages. The style approaches that used in compends in a tendency to outline the subject and to employ a staccato rhetoric. Proprietary drugs are stressed unduly and many of these are unfamiliar to the American reader. The insertion of brief bare outlines of case reports could well have been omitted. These are, however, minor criticisms, and the book is admirably suited for the audience intended, the general practitioner of some experience seeking to be brought in easy lessons abreast of progress in this field.

Essentials of Psychiatry. By George W. Henry, Associate Professor of Psychiatry, Cornell University Medical College, New York. Third edition. Cloth. Price, $5. Pp. 465. Baltimore: Williams & Wilkins Company, 1938.

Dr. Henry's excellent textbook has been considerably enlarged since its original appearance. Naturally the chapters dealing with the psychoses constitute the largest part. Borderline conditions cannot be dealt with in a book of this size. Perhaps more space is given to the topic of organic psychoses than is usually the case, but the matter is properly treated. The psychoneuroses are given a good deal of discussion. There is an excellent chapter on the method and purpose of mental examination, and a short but fairly good one on principles of treatment. Chapters on psychiatric nursing and psychopathology of the normal are included; those dealing with mental hygiene and disorders of childhood are perhaps too brief. Psychiatric social service work and the medicolegal aspects of psychiatry are touched on, and the final chapter deals with psychiatric history, a subject which perhaps is too sketchily dealt with here but is unfortunately almost entirely neglected in other textbooks. There is a brief bibliography. This is a good, simple textbook and is accurate enough for use in the earlier parts of a curriculum in psychiatry. It could be used as a basic text in a psychiatric course in a medical college provided it was supplemented in the later years by intensive reading in the literature of psychiatry. The work of Rosanoff is perhaps better suited to advanced students of psychiatry. No textbook of course can be entirely satisfactory, but this volume is subject to a minimum of criticism if one bears in mind that an attempt is made to cover a great deal of material in a limited space.

Outline of Roentgen Diagnosis: An Orientation in the Basic Principles of Diagnosis by the Roentgen Method. By Leo G. Rigler, B.S., M.B., M.D., Professor of Radiology, University of Minnesota, Minneapolis. Atlas edition. Cloth. Price, $6.50. Pp. 212, with 254 illustrations shown in 227 figures, presented in drawings and reproductions of roentgenograms. Figures 6 to 51 and 55 to 72 are drawings in an original technic by Jean E. Hirsch. Student's edition (exclusive of atlas). Paper. Price, $3. Pp. 212. Philadelphia, New York, Montreal & London: J. B. Lippincott Company, 1938.

This work appears in two editions: one with illustrations, and the other, a cheaper work, minus the plates but containing the same text. Essentially this is an outline of a teaching course in radiologic diagnosis and represents the considerable experience of the author. The book is divided into eleven sections, fairly well running the gamut of diseases to which the human body is subjected and in which the x-rays are used for diagnosis. The first section is devoted to an outline of general principles with brief descriptions of technics employed in roentgenology. Actual practical technic has been completely eliminated; only a solid residue of diagnostic facts is presented. Nevertheless a surprising amount of discussion is present. An interesting feature is the paragraph in the various sections which evaluates the particular usefulness of the roentgenogram in the locale or disorder involved. The plates in the complete edition are excellent and it is easy for the reader to grasp the salient points portrayed. There are a few line drawings of the more difficult portions of osteology and of the development of the ossification centers of the bones. For those physicians and students who seek guidance to methodical and clearcut interpretation of fluoroscopic and roentgenographic appearances, this small volume cannot be too highly recommended.

The Medical Dictator and Other Biographical Studies. By Major Greenwood, F.R.S., D.Sc., F.R.C.P. Cloth. Price, 7s. 6d. Pp. 213, with 6 illustrations. London: Williams & Norgate, Ltd., 1936.

The author of this book is listed as former statistician to the Lister Institute, chairman of the statistical committee of the Medical Research Council, president of the Royal Statistical Society and professor of epidemiology and vital statistics at the London School of Hygiene and Tropical Medicine. Naturally he has made the acquaintance of "men long dead and largely forgotten whose work has influenced the studies" he pursues, and he has inquired into what sort of people some of these dead investigators were. The subjects of his present inquiry are Galen, John Freind, "Heart" Latham, William Farr, Pierre Charles Alexandre Louis, Osler, and Arthur William Bacot. "Medical dictator" is an appellation which he may rightly bestow on Galen but which seems inappropriate to some, if not all, of the other personalities. Thirty-four pages of biography and criticism of an ancient whose system was based on the doctrine that all diseases depend on the balance or lack of balance of the four primary humors—blood, yellow bile, black bile and phlegm —seem too much.

Of Pierre Charles Alexandre Louis, the author says that his principal writings are unreadable. They are just sums. Louis apparently endeavored to establish a numerical system of diagnosis and prognosis, to the exposition of which he devoted a special memoir of sixty-five pages. When Osler in 1905 wished to lay a wreath on the tomb of Louis, no physician could be found in France who knew where he was buried.

Farr was a statistician and discovered a law to which his name has been attached and which "was the simplest possible

relation between the three ratios deducible from the four available figures which one could assume." He was able to foretell when the cattle plague which invaded England in 1865 would reach its maximum. After Farr retired, the British Medical Association officially expressed appreciation of his labor in behalf of statistical and sanitary science, of the light he had thrown on physiologic and pathologic problems and of the extraordinary services he had rendered in advancing the national health.

Latham had been a member of the staff of old St. Bartholomew's and a successful practitioner in London. He was also a critic of medical education. He believed that all knowledge was valuable but that, for a physician, the study of sick people was much more valuable than anything else.

John Freind is one of the heroes of the London College of Physicians. He became physician to the queen after the accession of George II. His "History of Physic" was his most important work and yet he made no important contribution to the art or science of physic. He had no use for ancient medical philosophy or modern medical systems, but he searched the literature for plain, practical remedies with no mystical nonsense about them. He died in 1728. The reason why Freind was beloved can be expressed in one word, character.

Cancer with Special Reference to Cancer of the Breast. By R. J. Behan, M.D., Dr. Med., F.A.C.S. Cloth. Price, $10. Pp. 844, with 168 illustrations. St. Louis: C. V. Mosby Company, 1938.

The author was formerly director of the cancer department of the Pittsburgh Skin and Cancer Foundation. Since he was unable to find in an abstracted form in a single monograph a description of the complex changes associated with the different phases of cancer, he began to collect, abstract, study and compile the principal facts and theories concerned with the etiology, diagnosis and treatment of cancer. The result was the present volume, which originally was written as a treatise on cancer of the breast. He reviews the advances in the study of cancer which seem to have substantial and positive foundations. He believes that our knowledge of the physiology and morphology of the cancer cell has about reached its limit of usefulness as a means of solving the cancer problem, that surgical intervention and irradiation have also reached the limits of their effectiveness, and that it is necessary for new methods of treatment to be developed from a study of the alterations in the biologic activity of the individual cancer cell. After a general consideration of the incidence and mortality of cancer in different countries and the relation of cancer to age and sex, he takes up the etiology, especially of cancer of the breast. Chapters followed on the pathology, symptomatology, diagnosis (including many so-called cancer tests), biopsy (including the technic), metastases and prognosis. Almost half of the book is given over to a consideration of the various forms of treatment. The author believes that the best results at present are obtained with a combination of surgical intervention and irradiation. In the treatment of cancer detailed consideration must always be given to the patient whose general state of health must be subjected to a critical investigation. The chapter on treatment is subdivided into sections on operative treatment, constitutional treatment and irradiation and includes a special section on the dosage of radioactive agents.

Air Conditioning: A Practical, Modern and Fundamental Treatise on the Subject of Air Conditioning, Air Distribution, Refrigeration, Comfort Cooling, Humidification and Air Purification. By Charles A. Fuller, M.E., Consulting Engineer on Air Conditioning, Heating and Ventilating, Electrical and Sanitary Equipment. With the collaboration of David Snow, Air Conditioning Engineer. Cloth. Price, $4. Pp. 577, with 300 illustrations. New York: Norman W. Henley Publishing Compnay, 1938.

This is a practical and fairly complete treatise on the mechanics of air conditioning. Written primarily for students, contractors and practical engineers, it contains much fundamental information to meet the needs of beginners in the art. There is little on physiologic and health aspects of air conditioning that would interest the physician. Whatever is said about the need of humidification, ionization or deodorization appears to have been based on manufacturers' literature. The print is large and readable and the illustrations are good. The index is fair and there is no bibliography despite the liberal use of basic sources of information.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Ethmoidal Sinusitis Attributed to Trauma.—The claimant, in the course of his employment, was struck on the forehead with a piece of metal pipe. A lacerated wound resulted, about 1½ inches long and extending down to the skull. A physician sutured the wound and treated it "in the usual way" for about six days. The published report does not show whether roentgenograms were made. According to the physician who treated the claimant at the time, the wound healed readily and there was no apparent reason why it should give trouble. Except for six days immediately following the accident, the injured workman lost no time from work until September 1936. In the interval, however, he had suffered from headaches of increasing intensity, which had become so severe as to prevent his working full time. The record shows that he was treated for "ethmoid sinus infection," but it does not show when that condition was first recognized or present any direct evidence concerning it. When the injured workman realized that he could no longer work full time—that is, two years after the accident—he filed a claim for compensation under the workmen's compensation act of Texas against his employer's insurance carrier.

The industrial accident board denied him compensation because he had not shown "good cause" for not filing his claim within six months after the injury. The claimant thereupon instituted suit in the district court, Wichita County, to set aside the order of the industrial accident board. Judgment was entered in his favor, and the insurer thereupon appealed to the court of civil appeals of Texas, Forth Worth.

The insurer contended that the claimant, as a matter of law, had not shown "good cause," as required by law, for his failure to file his claim within six months after he was injured. The appellate court pointed out, however, that the courts of Texas had often held that the question as to whether or not there was good cause for a claimant having failed to file his claim for compensation was a question of fact to be determined by a jury if one was demanded, and that the test was whether or not the claimant prosecuted his claim with such diligence as would have been exercised by a person of ordinary care under the same or similar circumstances. Quoting from *Texas Employers' Insurance Association* v. *Clark,* 23 S. W. (2d) 405, 408, the court said:

> That the employee did not believe his injuries to be serious would clearly afford a good cause for not giving notice and filing claim until it was learned they were serious. Compensation is not provided for pain and suffering, but for loss of wages, and there would arise no necessity for giving notice or filing a claim so long as the employee lost no time from his work, but believed his injuries were trivial.

The court could not properly have submitted to the jury an issue inquiring whether or not the claimant had shown good cause for not having sooner filed his claim; to have done so would have infringed the prerogative of the court. The court, however, submitted to the jury issues of fact on which the court might base its findings. The jury found that the claimant believed until about the time he filed his claim that the injuries would not disable him; that this belief prevented his filing his claim prior to the time when it was filed, and that a reasonably prudent person, situated as the claimant was, would have delayed the filing of his claim for a period as long as the claimant delayed in the present instance. The appellate court, therefore, refused to disturb the findings of the jury and of the trial court that good cause had been shown.

The insurer complained of the inadequacy of the testimony to support the finding of the jury that the claimant was totally and permanently incapacitated for work. The question, said the court, had to be determined from the opinions of experts among the medical profession, and it appeared to be as natural for them to disagree as it was for members of the legal profession. They seldom commit themselves to a positive statement that this or that injury to a part of the human anatomy will have a definite effect on the individual; they explain, and rightly so, said the court, that this is because of so many elements which

may enter into each case; such as infection, the physical condition of the person at the time of the injury, and many other like conditions. The medical witnesses had testified, in effect, from hypothetical questions put to them that the claimant could not pass the physical examination necessary to enable him to accept employment in the oil fields such as he had formerly engaged in. The physician treating the claimant for ethmoid sinus infection said that the blow on the claimant's head would probably produce such an infection; that in his opinion the claimant was incapacitated to do oil field work and that his incapacity was permanent. To constitute total incapacity, it is not necessary to establish as a fact that the claimant cannot do any kind of labor; it is sufficient if he is disqualified from performing the usual tasks of a workman in such a way as to enable him to procure and retain employment. There was ample evidence to support the finding of the jury favorable to the claimant.

The appellate court accordingly affirmed the judgment of the trial court in favor of the claimant.—*Texas Employers Ins. Ass'n v. Roberts (Texas), 116 S. W. (2d) 417.*

Medical Practice Acts: Treatment of Physical Deformity by Cosmetologist Constitutes Practice of Medicine.—Three prosecutions were brought against Gardner, charging that he practiced medicine without having been licensed so to do. From three judgments of conviction, he appealed to the court of criminal appeals of Texas. Gardner admittedly had treated one Lato, the muscles about one of whose eyes had become stretched from the prolonged use of a loupe (a type of magnifying glass which fits over the eye), "causing the skin and flesh to sag down." Lato testified that he consulted Gardner concerning this condition. Gardner put some "stuff" that smelled like chloroform around Lato's eye to kill the pain and then placed "a strong acid" around the eye, which burned the patient and caused such severe swelling as almost to close the eye. Gardner continued to treat Lato for about four weeks and Lato paid him $75 for his services. Gardner claimed that what he had done was not the practice of medicine but had been done pursuant to the practice of cosmetology, which he was licensed to practice. He had used no chloroform nor acid, he said, but had applied only a "beauty peel," purchased by him in a drug-store.

In the judgment of the court, Gardner's acts constituted the practice of medicine within the meaning of the medical practice act of Texas, which declares, among other things, that any person shall be regarded as practicing medicine who treats or offers to treat any physical deformity or injury, by any system or method, or offers to effect cures thereof and charges therefor. The court affirmed the three judgments of conviction.—*Gardner v. State (Texas), 116 S. W. (2d) 402; Same, 116 S. W. (2d) 403; Same, 116 S. W. (2d) 403.*

Society Proceedings

COMING MEETINGS

American Medical Association, St. Louis, May 15-19. Dr. Olin West, 535 North Dearborn St., Chicago, Secretary.

American Academy of Tuberculosis Physicians, St. Louis, May 13-14. Dr. Arnold Minnig, 638 Metropolitan Bldg., Denver, Secretary.

American Association for the Study of Goiter, Cincinnati, May 22-24. Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., Secretary.

American Association for Traumatic Surgery, Hot Springs, Va., May 8-9. Dr. Ralph G. Carothers, 409 Broadway, Cincinnati, Secretary.

American Association of Genito-Urinary Surgeons, Williamsburg, Va., May 24-26. Dr. Charles C. Higgins, 2050 East 93d St., Cleveland, Secretary.

American Association of Industrial Physicians and Surgeons, Cleveland, June 5-8. Dr. V. S. Cheney, Armour and Company, Union Stock Yards, Chicago, Secretary.

American Association of the History of Medicine, Atlantic City, N. J., April 30-May 1. Dr. Henry E. Sigerist, 1900 Monument St., Baltimore, Secretary.

American Association on Mental Deficiency, Chicago, May 3-6. Dr. E. Arthur Whitney, Washington Road, Elwyn, Pa., Secretary.

American Bronchoscopic Society, Rye, N. Y., May 26. Dr. Lyman Richards, 319 Longwood Ave., Boston, Secretary.

American College of Chest Physicians, St. Louis, May 13-14. Dr. Robert B. Homan Jr., 109 North Oregon St., El Paso, Texas, Secretary.

American Dermatological Association, Montebello, Canada, May 31-June 3. Dr. Fred D. Weidman, University of Pennsylvania Medical Laboratories, Philadelphia, Secretary.

American Gastro-Enterological Association, Atlantic City, N. J., May 1-2. Dr. Russell S. Boles, 1901 Walnut St., Philadelphia, Secretary.

American Gynecological Society, White Sulphur Springs, W. Va., May 22-24. Dr. Richard W. TeLinde, 11 East Chase St., Baltimore, Secretary.

American Heart Association, St. Louis, May 12-13. Dr. Howard B. Sprague, 50 West 50th St., New York, Secretary.

American Laryngological Association, Rye, N. Y., May 24-26. Dr. James A. Babbitt, 1912 Spruce St., Philadelphia, Secretary.

American Laryngological, Rhinological and Otological Society, Chicago, May 10-11. Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.

American Neurological Association, Atlantic City, N. J., June 5-7. Dr. Henry A. Riley, 117 East 72d St., New York, Secretary.

American Ophthalmological Society, Hot Springs, Va., June 5-7. Dr. Eugene M. Blake, 303 Whitney Ave., New Haven, Conn., Secretary.

American Orthopedic Association, Buffalo, N. Y., June 5-8. Dr. Ralph K. Ghormley, 110 Second Ave. S.W., Rochester, Minn., Secretary.

American Otological Society, New York, May 22-23. Dr. Thomas J. Harris, 104 East 40th St., New York, Secretary.

American Psychiatric Association, Chicago, May 8-12. Dr. Arthur H. Ruggles, Butler Hospital, Providence, R. I., Secretary.

American Radium Society, St. Louis, May 15-16. Dr. Frederick W. O'Brien, 465 Beacon St., Boston, Secretary.

American Rheumatism Association, St. Louis, May 15. Dr. Loring T. Swaim, 372 Marlborough St., Boston, Secretary.

American Society for Clinical Investigation, Atlantic City, N. J., May 1. Dr. Isaac Starr, University of Pennsylvania Hospital, Philadelphia, Secretary.

American Society for the Study of Allergy, St. Louis, May 15-16. Dr. J. Harvey Black, 1405 Medical Arts Bldg., Dallas, Texas, Secretary.

American Society of Clinical Pathologists, St. Louis, May 12-14. Dr. Alfred S. Giordano, 531 N. Main St., South Bend, Ind., Secretary.

American Surgical Association, Hot Springs, Va., May 11-13. Dr. Charles G. Mixter, 319 Longwood Ave., Boston, Secretary.

American Therapeutic Society, St. Louis, May 12-13. Dr. Joseph F. Elward, 1726 Eye St. N.W., Washington, D. C., Secretary.

American Urological Association, White Sulphur Springs, W. Va., May 29-June 1. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.

Arkansas Medical Society, Hot Springs National Park, May 8-10. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.

Associated Anesthetists of the United States and Canada, St. Louis, May 15. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary General.

Association for the Study of Internal Secretions, St. Louis, May 13-14. Dr. E. Kost Shelton, 921 Westwood Blvd., Los Angeles, Secretary.

Association of American Physicians, Atlantic City, N. J., May 2-3. Dr. Hugh J. Morgan, Vanderbilt University Hospital, Nashville, Tenn., Secretary.

Association of Military Surgeons of the United States, Washington, D. C., May 8-10. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.

California Medical Association, Del Monte, May 1-4. Dr. George H. Kress, 450 Sutter St., San Francisco, Secretary.

Connecticut State Medical Society, New Haven, May 25-26. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.

Florida Medical Association, Daytona Beach, May 1-3. Dr. Shaler Richardson, 111 W. Adams St., Jacksonville, Secretary.

Illinois State Medical Society, Rockford, May 2-4. Dr. H. M. Camp, 224 S. Main St., Monmouth, Secretary.

Kansas Medical Society, Topeka, May 1-4. Mr. C. G. Munns, 112 W. 6th St., Topeka, Executive Secretary.

Massachusetts Medical Society, Worcester, June 6-8. Dr. Alexander S. Begg, 8 Fenway, Boston, Secretary.

Minnesota State Medical Association, Minneapolis, May 31-June 2. Dr. B. B. Souster, 11 West Summit Ave., St. Paul, Secretary.

Mississippi State Medical Association, Gulfport, May 9-11. Dr. T. M. Dye, McWilliams Bldg., Clarksdale, Secretary.

National Gastroenterological Association, New York, June 1-2. Dr. G. Randolph Manning, 1819 Broadway, New York, Secretary.

Nebraska State Medical Association, Grand Island, May 2-4. Dr. R. B. Adams, 414 Federal Securities Bldg., Lincoln, Secretary.

New Hampshire Medical Society, Manchester, June 8-9. Dr. Carleton R. Metcalf, 5 South State St., Concord, Secretary.

New Jersey, Medical Society of, Atlantic City, June 6-8. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.

New Mexico Medical Society, Gallup, May 11-13. Dr. L. B. Cohenour, 219 W. Central Ave., Albuquerque, Secretary.

New York State Association of Public Health Laboratories, Valhalla, May 8. Miss Mary B. Kirkbride, New Scotland Ave., Albany, Secretary.

North Carolina, Medical Society of the State of, Cruise to Bermuda, May 9-14. Dr. T. W. M. Long, Roanoke Rapids, Secretary.

North Dakota State Medical Association, Fargo, May 8-10. Dr. Albert W. Skelsey, 20½ North Broadway, Fargo, Secretary.

Ohio State Medical Association, Toledo, May 3-4. Mr. C. S. Nelson, 79 E. State St., Columbus, Executive Secretary.

Oklahoma State Medical Association, Oklahoma City, May 1-3. Dr. L. S. Willour, Third and Seminole, McAlester, Secretary.

Pacific Coast Oto-Ophthalmological Society, San Francisco, June 19-22. Dr. C. Allen Dickey, 450 Sutter St., San Francisco, Secretary.

Rhode Island Medical Society, Providence, June 7-8. Dr. Guy W. Wells, 124 Waterman St., Providence, Secretary.

Society of Surgeons of New Jersey, Elizabeth, May 25. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.

Texas, State Medical Association of, San Antonio, May 8-11. Dr. Holman Taylor, 1404 West El Paso St., Fort Worth, Secretary.

Vancouver Medical Association Summer School, Vancouver, B. C., June 6-9. Dr. W. W. Simpson, 203 Medical Dental Bldg., Vancouver, B. C., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1929 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases, Huntington, Ind.

5: 777-850 (Feb.) 1939

Effect of Anterior Pituitary-like Hormone on Gastric Acidity in Man. H. Felson and L. Schiff, with technical assistance of Ellen S. Garber, Cincinnati.—p. 777.

*Observations on Incidence and Cause of Fever in Patients with Bleeding Peptic Ulcers. L. V. Dill and C. E. Isenhour, Nashville, Tenn.—p. 779.

Effect of Pyloric Obstruction on Filling and Emptying of the Gallbladder in Cholecystography. M. Feldman, Baltimore.—p. 785.

History and Development of Gastric Analysis Procedure (Second Instalment). F. Hollander and A. Penner, New York.—p. 786.

Disposable Nonbreakable Hard Enema Tip. M. Kraemer, Newark, N. J.—p. 791.

Attempt to Prevent Postoperative Jejunal Ulcer by Aluminum Hydroxide Therapy: Experimental Study in Mann-Williamson Dogs. G. B. Fauley, A. C. Ivy, L. Terry and W. B. Bradley, Chicago.—p. 792.

*Chronic Localized Gastric Purpura. R. Schindler, Chicago.—p. 796.

Review of Some Foreign Literature. R. Schindler, Chicago.—p. 799.

Problems of Maintaining Nutrition in the Highly Food-Sensitive Person. W. C. Alvarez, Rochester, Minn.—p. 801.

Peritonitis Due to Ruptured Acute Appendicitis in Children: Influence of Delay on Operative Mortality. R. Elman, St. Louis.—p. 804.

Pellagra Treated with Nicotinic Acid: Report of Ten Cases. V. H. Musick, Oklahoma City.—p. 807.

Studies on Water and Soap Enemas. R. D. Templeton and E. L. Borkon, Chicago.—p. 809.

Anorexia and Gastric Motility. Dorothy P. Gulliksen, Alma Fogelberg and L. Kardos, Chicago.—p. 814.

Fever in Peptic Ulcer.—Dill and Isenhour determined the incidence of fever (any rise in temperature above 99 F. which was sustained for more than two days, any rise to 99.2 F. or above for two days or any single rise exceeding 100 F.) in 199 male patients with proved peptic ulcers. Each patient had been observed in the hospital for more than three days and was known, within the limits of error, to have no intercurrent infection. The authors state that the incidence of fever in their patients (53 per cent) is identical with the series published by Bang but greatly exceeds those of Kroner (18 per cent) and Lorenz (24 per cent). They found that 80 per cent of their patients with bleeding ulcers were febrile. These figures do not differ greatly from those of Purjesz (73 per cent) or Bang (91 per cent) but are well above those quoted by Kroner (58 per cent). Their percentage of febrile, nonbleeding ulcer cases (46 per cent) is much higher than that of Kroner (16 per cent) or of Bang (7 per cent). Patients without demonstrable organic lesions had fever, according to the authors' definition, in a significantly high percentage (37.1). Their study shows that patients with ulcers have fever more frequently than patients with no demonstrable organic lesion and that bleeding increases this tendency. The presence of anemia also increases the febrile tendency in patients with both bleeding and nonbleeding ulcers. Massive and moderately severe hemorrhages are more frequently associated with fever than are small hemorrhages. The occurrence of fever could not be correlated with either the age of the patient or the duration of ulcer symptoms. The absence of leukocytosis in the patients led the authors to assume that infection of the base of the ulcer or an associated gastritis or duodenitis is not important in the production of fever. Experimental evidence seems to indicate that little part is played in the production of fever by either blood in the intestinal tract or absorption of blood degradation products. There was relatively high incidence of fever in patients with gastric neuroses.

Chronic Localized Gastric Purpura.—Schindler believes that chronic localized purpura of the stomach is not only a new but also an important disease. Gastroscopically, besides the more or less numerous mucosal hemorrhages, dark brown round or star-shaped spots may be found. They are usually from 2 to 5 mm. in diameter but occasionally much larger. They apparently develop from the mucosal hemorrhages; the transition may be observed if the patient is examined with the gastroscope at frequent intervals. Hemorrhages and pigment spots may be found along the anterior and posterior wall but are most frequently in rows along the lesser curvature. The common site of their location is a point about 3 cm. above the angulus. The pigment spots disappear slowly, probably by absorption. However, some hemorrhages, instead of being absorbed, become ulcerated and develop into a hemorrhagic erosion, red, grayish red or brownish red. Gastroscopy has verified the observation that true hemorrhagic erosions do exist. By the fact that they may become ulcerated, the eruptions of the localized purpura of the stomach are definitely different from the cutaneous eruptions in generalized purpura. This difference is easily explained. In the stomach the acid gastric juice developing peptic power is present, in which case the gastric wall may lose its autoprotective power against autodigestion if it is damaged for a long time by some disturbance of the circulation. The frequent coincidence of such isolated gastric purpura with true gastroduodenal ulcer does not prove that hemorrhagic erosion is the acute stage of chronic gastroduodenal ulcer. Chronic inflammation in stomachs containing true gastroduodenal ulcer is apparently secondary to the ulcer. However, the presence of noninflammatory gastric hemorrhages is not easily explained by assuming that they are effected by the ulcer, it would be difficult to explain why they are so often found at the place of predilection of ulcers (the angulus), and finally the author believes that he has observed the transition of mucosal gastric hemorrhages into true gastric ulcer. Therefore his opinion is that (1) there is a definite relationship between chronic localized gastric purpura and chronic gastroduodenal ulcer, (2) chronic isolated gastric purpura may precede or follow chronic gastroduodenal ulcer or they may be found together and (3) the hemorrhagic erosion, having its origin from the chronic localized gastric purpura by the peptic quality of the gastric contents, may be the acute stage of chronic gastroduodenal ulcer.

American Journal of Hygiene, Baltimore

29: 1-60 Section A (Jan.) 1939. Partial Index
1-44 Section B
1-44 Section C
1-46 Section D

Section A

Cobalt Content of Some Food Materials from Different Parts of the United States. B. Ahmad and E. V. McCollum, Baltimore.—p. 24.

Importance of Field Studies of Leprosy, with Especial Reference to the Risk of Household Exposure. J. A. Doull, Cleveland.—p. 27.

*Cancer in the United States Navy. S. Peller, Baltimore, and C. S. Stephenson, Washington, D. C.—p. 34.

Section B

Further Studies on Biochemical and Serologic Varieties of Salmonella Typhi-Murium. P. R. Edwards and D. W. Bruner, Lexington, Ky.—p. 24.

Physiologic Effects of Garlic and Derived Substances. M. Carl, R. S. McKnight, B. Scott and C. C. Lindegren, Los Angeles.—p. 32.

Section C

Serum Potassium Level in Trypanosoma Equiperdum Infection in Rats: Role of Potassium in Death from This Infection. R. L. Zwemer and J. T. Culbertson, New York.—p. 7.

Section D

Investigation Concerning the Status of Hookworm in Florida. W. S. Leathers, A. E. Keller, Nashville, Tenn., and W. A. McPhaul, Jacksonville, Fla.—p. 1.

Studies on Oxyuriasis: XII. Epidemiologic Findings in Washington, D. C. Eloise B. Cram and Lucy Reardon, Washington, D. C.—p. 17.

Immunization of Dogs Against Hookworm, Ancylostoma Caninum, by Subcutaneous Injection of Graded Doses of Living Larvae. G. F. Otto and K. B. Kerr, Baltimore.—p. 25.

Cancer in the Navy.—Peller and Stephenson deal with a study of the cancers that occurred in the United States Navy during the years 1929 to December 1936. During this period there were 320 deaths from cancer. Of these, ninety-eight men were in active duty status, in seventeen additional persons the onset of the malignant condition was during active service but they died following discharge from the navy and 205 of these cases occurred in men in an inactive duty status. Compared to civil populations there are many more surface cancers in the navy personnel and fewer internal cancers. Since the former are easily cured, the average case fatality of all cancers (about 50 per cent) is low. Owing to the greater frequency of cuta-

neous cancers and lesser frequency of internal ones, the mortality between the ages from 25 to 64 is about 50 per cent lower than would be expected from age, sex and color-specific cancer rates of New York for 1930. The cutaneous and lip cancer morbidity among active navy personnel is several times as high as in the civil population. This is explained by greater exposure to cutaneous irritants, especially sun, salt water and wind. Since total morbidity in the active personnel and total mortality in the ages above 65 are not higher than in the civil population, the conclusion seems to be justified that increased exposure to the sun is beneficial rather than detrimental.

American Journal of Medical Sciences, Philadelphia

197: 141-280 (Feb.) 1939

The Alleged Dulness Over the Apex of the Normal Right Lung. W. Coleman, New York.—p. 141.
Role of Vibration Sense in Percussion. W. Coleman, New York.—p. 145.
*Specific Treatment of Pneumococcus Type I Pneumonia, Including Use of Horse and Rabbit Antipneumococcus Serums and Sulfanilamide. M. Finland, Boston, and J. W. Brown, San Francisco.—p. 151.
Sulfanilamide in Treatment of Gonococcic Arthritis. C. S. Keefer and L. A. Rantz, Boston.—p. 168.
Clinical Studies in Circulatory Adjustments: V. Clinical Evaluation of Cardiodynamic Studies. A. A. Goldbloom and A. Lieberson, New York.—p. 182.
Movements of Roentgen-Opaque Deposits in Heart Valve Areas: II. Excursion of Apex and Base of Left Ventricle Compared with That of Left Border. C. C. Wolferth and A. Margolies, Philadelphia.—p. 197.
Histologic Investigation into the Pyloric Gland Organ in Pernicious Anemia. E. Meulengracht, Copenhagen, Denmark.—p. 201.
Erythremia, Gout and Subleukemic Myelosis: Case. G. H. Reifenstein, Boston.—p. 215.
Mechanism of Compensatory Changes in Anemia, Especially as Regards Blood Carbon Dioxide and Hydrogen Ion Concentration. F. L. Apperly and M. K. Cary, Richmond, Va.—p. 219.
*Blood Plasma Ascorbic Acid in Patients with Achlorhydria (Pernicious and Iron Deficiency Anemia). H. L. Alt, H. Chinn and C. J. Farmer, Chicago.—p. 229.
Fatal Bacterial Endocarditis Due to Salmonella Suipestifer. D. E. Forster, Portland, Ore.—p. 234.
Use of Electrocardiographic Changes Caused by Induced Anoxemia as Test for Coronary Insufficiency. R. L. Levy, H. G. Bruenn and N. G. Russell Jr., New York.—p. 241.
Serologic and Immunologic Studies Relative to the Viruses of Human and Swine Influenza. Dorothy R. Shaw, A. S. Kenney, New Orleans, and J. Stokes Jr., Philadelphia.—p. 247.
*Complement Fixation Studies on the Serums of Individuals Vaccinated with Active Virus of Human Influenza. A. P. Morrison, Dorothy R. Shaw, A. S. Kenney, New Orleans, and J. Stokes Jr., Philadelphia.—p. 253.

Specific Treatment of Type I Pneumonia.—Finland and Brown state that the death rate among cases of type I pneumococcus pneumonia treated with concentrated type specific antibody at the Boston City Hospital has been regularly one half or less that of similar contemporaneous cases not treated with serum. This has remained true in recent years in spite of the fact that the proportion of cases treated with serum has increased from 43 to 89 per cent. In the cases treated with serum before the end of the fourth day of illness the death rate is less than one third of that which occurs in cases not treated with serum. Bacteremic and nonbacteremic cases are equally influenced. The greatest reduction in the death rate occurs in patients less than 50 years of age, but those of other age groups are probably also beneficially affected by serum treatment. Empyema occurred after serum treatment chiefly in bacteremic patients, and its frequency was proportional to the delay in beginning treatment. Type I antipneumococcus serums produced in both horses and rabbits were potent and effective. There are insufficient data to indicate any superiority of the one over the other. Sulfanilamide in the small number of cases in which it was used alone or with serum influenced the course of type I pneumonia only slightly if at all.

Ascorbic Acid in Plasma in Achlorhydria.—In order to obtain further information on the concentration of ascorbic acid in the blood of patients with achlorhydria, Alt and his co-workers determined the ascorbic acid of the blood plasma in forty-four cases of achlorhydria associated with pernicious or iron deficiency anemia. The results in general seem to confirm the hypothesis that a relationship exists between achlorhydria and vitamin C deficiency. With diets adequate in vitamin C, the mean blood ascorbic acid was significantly decreased from the normal in the cases of pernicious anemia but not in the iron deficiency anemia group. With diets inadequate in vitamin C the plasma ascorbic acid was significantly decreased from that observed in twenty-four controls, in both the pernicious and the iron deficiency anemia groups. The plasma ascorbic acid values showed no correlation with the erythrocyte counts and hemoglobins. Experiments were performed in an attempt to explain why there might be an association between vitamin C deficiency and achlorhydria, but none established an explanation for such an association. Possibly a combination of such factors as lack of an acid gastric juice, bacterial growth and malabsorption might be sufficient to interfere with the assimilation of ascorbic acid in such cases.

Active Virus of Human Influenza.—Morrison and his associates studied the effect of active human influenza virus on the complement fixing antibodies of the serums of patients vaccinated with it. They compared this with a similar and simultaneous study of the serums of a group of nonvaccinated controls. The serums of the same individuals were studied over a period of from one to two years under similar environmental conditions but in the presence of a variety of intercurrent respiratory infections. Constantly low titers of complement fixing antibodies were found in the same individual over a long period if no infection with influenza virus had occurred and even though they had suffered from other types of respiratory infection. Such low titers persisted among the hospital personnel in a large urban center as well as in the more isolated sections studied. Repeated vaccination with chick embryo tissue culture vaccine as prepared in large batches for injection did not affect the complement fixing antibodies. If the complement fixing antigen is a soluble substance liberated during multiplication of the virus in the tissues it is also possible that the use of infected mouse lung rather than chick embryo tissue culture vaccine might result in an increase in the complement fixing antibodies. Vaccine derived from chick embryo tissue cultures following parenteral injection produced characteristic increases in the neutralizing properties of serums. By the same route, in mice, it also produced immunity to the virus injected as well as cross immunity to other strains of human influenza virus. In a few instances marked elevation in titer of complement fixing antibodies studied in the serums of individuals following hospitalization established the cause of their respiratory infections as epidemic influenza. Such increases were absent following other types of respiratory infection. By such studies future epidemics of respiratory disease may be more satisfactorily classified as to etiology.

American Journal of Psychiatry, New York

95: 769-1006 (Jan.) 1939. Partial Index

Pharmacologic Shock Treatment of Schizophrenia: Statistical Study of Results in the New York State Hospitals. J. R. Ross, Wingdale, N. Y.—p. 769.
Use of Metrazol in the Functional Psychoses. C. F. Read, D. L. Steinberg, E. Liebert, Elgin, Ill., and I. Finkelman, Chicago.—p. 781.
Results to Date with Pharmacologic Shock Treatment of Schizophrenia. K. M. Bowman, J. Wortis, H. Fingert and Julia Kagan, New York.—p. 787.
Insulin Treatment in Schizophrenic Patients: Clinical and Biochemical Studies. S. Katzenelbogen, Baltimore; H. E. Harms, Catonsville, Md.; Ruth Willmans, S. Barkoff, M. W. Brody and M. Hayman, Sykesville, Md.—p. 793.
Correlation of Insulin Shock and Convulsive States Relative to Symptoms and Site of Greatest Disturbance in the Central Nervous System. S. D. Ingham, J. M. Nielsen and K. O. von Hagen, Los Angeles.—p. 819.
Analogies and Opposites in Schizophrenia and Epilepsy: Electro-Encephalographic and Clinical Studies. H. H. Jasper, C. P. Fitzpatrick, Providence, R. I., and P. Solomon, Boston.—p. 835.
*Paucity of Arthritis Among Psychotic Cases. D. Gregg, Wellesley, Mass.—p. 853.
*Constitutional Differences Between Deteriorated and Nondeteriorated Patients with Epilepsy: II. Anthropometric Measurements. H. A. Paskind and M. Brown, Chicago.—p. 901.
Results of Eighteen Months of Benzedrine Sulfate Therapy in Psychiatry. E. Davidoff and E. C. Reifenstein Jr., Syracuse, N. Y.—p. 945.
Fatal Cases of Acute Manic-Depressive Psychosis. C. P. Larson, Tacoma, Wash.—p. 971.

Paucity of Arthritis in Psychosis.—Gregg presents the morbidity rates of arthritis in Massachusetts and among psychotic persons in the Massachusetts state hospitals. It has been stated that approximately 145,000 individuals in Massachusetts suffer from rheumatism. A similar prevalence among psychotic persons does not coincide with the author's experience or with the opinions of other hospital superintendents whom he consulted. To obtain more definite information, he sent a ques-

tionnaire to hospital superintendents, and from the first eight state hospitals and from one United States Veterans' hospital in Massachusetts the reports gave four bedridden and sixteen seriously handicapped patients with arthritis among more than 15,000 patients in these nine hospitals. Two of these twenty patients were less than 40 years of age and in eight of the remaining eighteen arthritis developed before entrance to the hospital. Whether this means that the arthritis antedated the psychosis is unknown. Assuming that the data are comparable, the incidence of disabling arthritis is seventeen times greater in the community than among psychotic patients in Massachusetts state hospitals. Evidence obtained by other investigators that confirms the discrepancy of the incidence of arthritis in the two groups is presented. Among psychotic patients without a prolonged stimulus-reaction span, because of impaired imagination and memory, there is little prolonged muscle tension or drag on the joints, little setting of the stage for prolonged ischemia, malnutrition or infection of the joints and therefore seldom chronic arthritis.

Body Build Differences in Epilepsy.—In order to determine whether differences exist in body habitus of deteriorated and nondeteriorated epileptic patients, Paskind and Brown took anthropometric measurements of fifty deteriorated and thirty-nine nondeteriorated epileptic patients. Eighty measurements were recorded for each patient according to the technic described by Martin, Saller and Draper. Fifty-seven indexes were also calculated for each patient to show the relation in size existing between a given part of the body and other parts. With few exceptions the mean values for the various measurements are greater in the deteriorated patients. Significant differences also exist in the mean values of the indexes. All indexes relating weight to height indicate that the deteriorated patients are heavier per unit of height and that their trunks are wider and deeper per unit of height than are those of the nondeteriorated patients. The deteriorated patients have narrower faces per unit of face height than do the nondeteriorated ones. Trunk and entire body measurements and indexes of exceptional size (large or small) occur more frequently in the nondeteriorated patients, whereas values of unusual size in head, hand and foot measurements and indexes occur more often in the deteriorated patients.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

41: 1-144 (Jan.) 1939

Visualization of the Chambers of the Heart, the Pulmonary Circulation and the Great Blood Vessels in Man: Practical Method. G. P. Robb and I. Steinberg, New York.—p. 1.
Ventriculography of the Fourth Ventricle. E. Lysholm, Stockholm, Sweden.—p. 18.
Roentgen Diagnosis and Treatment of Angioma of Tympanic Cavity. A. O. Hampton and D. A. Sampson, Boston.—p. 25.
Ventricular Aneurysm: Roentgenographic and Postmortem Surveys. J. B. Schwedel and H. Gross, New York.—p. 32.
Respiratory Motion of Lung During Artificial Pneumoperitoneum Treatment: Roentgenologic Study. A. L. Banyai, Wauwatosa, Wis.—p. 37.
Pancreatic Lithiasis: Report of Case. C. L. Gillies, Iowa City.—p. 42.
Skeletal Metastasis in Teratoma of Testicle: Report of Two Cases. S. K. Livingston, Hines, Ill.—p. 47.
Gross Morphology of Cervical Cancer in Relation to Its Curability. T. R. Hofmann, San Francisco.—p. 51.
*Survey of 293 Cases of Cancer of the Cervix Uteri, 223 of Which Were Treated from 1916 to 1933 by Radiation Therapy at Grace Hospital, Detroit. R. H. Stevens and A. K. Payne, Detroit.—p. 55.
Significance of Urologic Surveys in Cervical Carcinoma. W. E. Howes and H. Strauss, Brooklyn.—p. 63.
Management of Major Complications During Radium Therapy of Carcinoma of Cervix. H. H. Bowing and R. E. Fricke, Rochester, Minn.—p. 69.
Aids to Irradiation in Management of Carcinoma of the Cervix Uteri. L. A. Pomeroy, Cleveland.—p. 73.
Treatment of Injuries Produced by Roentgen Rays and Radioactive Substances. E. Uhlmann, Istanbul, Turkey.—p. 80.
Inheritance Structure of the Cell and Its Relation to Irradiation Effects. J. W. Gowen, Ames, Iowa.—p. 91.
Scheme of Protection Which Has Proved Satisfactory in a Large Radium Therapy Center. J. R. Nuttall, Manchester, England.—p. 98.
Standardized Radium Tube—Related Dosage Problems: Preliminary Note. J. Murdoch, Brussels, Belgium; R. Coliez, Paris, France, and E. Stahel, Brussels, Belgium.—p. 110.
Some Studies on the Dielectric Strength of Insulating Fluids. E. E. Charlton and F. S. Cooper, Schenectady, N. Y.—p. 114.

End Results in Radiation Therapy of Cancer of Cervix.—Stevens and Payne present statistics on 293 cases of carcinoma of the cervix, 223 of which were treated by radiation therapy prior to 1933. In the 223 cases there were nine of carcinoma of the cervical stump after supracervical amputation for fibroid tumor. Five of these were proved by biopsy to be squamous cell carcinomas. All patients as they came were accepted for treatment. In about 75 per cent the cancers were far advanced. Of the 223 cases, 137 were proved by biopsy and 20.4 per cent of these were cured for five years or more. Of the 177 traced cases comprising both those histologically proved and those only clinically diagnosed, the number of five year cures is identical with that of the cases proved by biopsy. The cancers of eleven patients were cauterized by the Percy soldering iron or by electrocautery previous to irradiation. They did not live through the five year period. Panhysterectomies on fourteen patients with early operable cancers were performed at varying intervals before radiation treatment. Three of these, microscopically proved, lived beyond the five year period, two for nine years and one for sixteen years. Two patients with squamous cell carcinoma, each 28 years of age, who had radiation treatment alone survived the five year period, one for seven years. Twenty-three patients whose cancers were proved by biopsy recently traced are alive, well and clinically cured after from five to sixteen years. Of the total number of cases in this survey, 52.4 per cent had roentgen and radium therapy, 42.2 per cent had roentgen therapy without radium and 4.4 per cent had radium without roentgen therapy. None of the ten patients treated with radium alone survived the five year period. Nearly all the cases in this series should, the authors say, be classed as stage 3, and efficient roentgen irradiation throughout the entire pelvis should have been administered in all of them. Radium irradiation was inadequate.

American Journal of Surgery, New York

43: 199-656 (Feb.) 1939. Partial Index

Practical Uses of the Tubed Pedicle Flap. H. Gillies, London, England.—p. 201.
New Method of Tube Pedicle Skin Grafting. M. Maltz, New York.—p. 216.
Reconstructions About the Nasal Tip. C. L. Straith, Detroit.—p. 223.
Repair of Postoperative Defects of Lips. G. B. New and J. B. Erich, Rochester, Minn.—p. 237.
The Traumatic Shoulder, with Special Reference to Rupture of the Supraspinatus Tendon. H. V. Spaulding, New York.—p. 298.
Elbow Injuries of Childhood Resulting from Median Epicondylar Separations. J. Dunlop, Pasadena, Calif.—p. 310.
*Treatment and Results of 870 Severed Tendons and Fifty-Seven Severed Nerves of the Hand and Forearm (in 362 Patients). M. C. O'Shea, New York.—p. 346.
Shelf Operation for Congenital Dislocation of Hip. E. L. Compere, Chicago.—p. 404.
Reconstruction of Top of Femur (Lever) or Its Elongation in Paralytic Conditions. F. H. Albee, New York.—p. 416.
Treatment of Ulcer of Leg. B. Douglas, Nashville, Tenn.—p. 429.
Cruciate Ligaments: Résumé of Operative Attacks and Results Obtained. W. R. Cubbins, J. J. Callahan and C. S. Scuderi, Chicago.—p. 481.
Restoration of Motion in Fibrous Ankylosis of the Knee with Description of a New Apparatus. R. L. Preston, New York.—p. 519.
Operation for Cure of Achillobursitis. I. Zadek, New York.—p. 542.
Amputations and Prosthesis. H. H. Kessler, Newark, N. J.—p. 560.
Surgical Fusion of Unstable Joints Due to Neuropathic Disturbance. M. Cleveland, New York.—p. 580.
Biochemical Investigation of Arthritis: Preliminary Report on Uric Acid, Glutathione and Sulfur in Blood and Sulfur in the Urine. T. F. Wheeldon, Richmond, Va., and L. H. Bosher Jr., Boston.—p. 598.
Significance of Cystine Content of Fingernails in Arthritis. M. X. Sullivan, Washington, D. C.—p. 620.

Treatment of Severed Tendons and Nerves of Lower Arm.—O'Shea presents the data on the 870 severed tendons and fifty-seven severed nerves of the hand, wrist and forearm that were treated by the surgeons of St. Vincent's Hospital during the last fifteen years. He states in conclusion that primary repair of tendons should be performed whenever possible. The interval between injury and operation should be short. The simple mattress stitch (black silk) will approximate the tendon ends and destroy fewer lymph channels. Only the long flexor tendon—the profundus—should be repaired. Repaired wounds should never be drained. If drainage is necessary, primary repair should not be performed. Infection occurred in 40 per cent of drained wounds. Infection occurred almost twice as frequently at the wrist as on any surface of any digit. It occurred in 15 per cent of all operations, but in less than 3 per cent of 101 wounds that were not drained but repaired with black silk sutures, as compared to 18 per cent of 130 nondrained wounds repaired with chromic catgut. "Full thickness" skin

grafting should be performed as soon as possible when the skin over tendons or nerves is evulsed. The use of black silk permits early motion because of its increased tensile strength and fewer edematous reactions. A patient should be hospitalized for at least two weeks and in bed for the first week giving maximal rest to the hand. The hand should be elevated for several days. The "end results" of tendon repair were impaired and retarded by fractures (ninety-five) and severed nerves which necessitated prolonged immobilization in splints. The end result is greatly dependent on the surgeon's personal management during the first three or four weeks of postoperative care. A follow-up of 40 per cent of the repaired tendon cases shows satisfactory functional results in 80.5 per cent of the cases. All extensor tendons showed 94 per cent satisfactory results, the flexor tendons of the wrist 81 per cent and the digital flexor tendons only 65 per cent. A partially severed nerve should be repaired in order to prevent the formation of scar tissue, which hinders regeneration of the nerve fibers. A follow-up of 40 per cent of the repaired severed nerves showed satisfactory functional results in 77 per cent of the cases. Satisfactory regeneration was obtained in 70 per cent of the ulnar, 78 per cent of the median and 100 per cent of the superficial branch of the radial nerve injuries. Motor function is difficult of restoration in lacerations of the ulnar nerve above the wrist. No deaths occurred in any of the 311 operative cases of tendon or nerve injuries.

American Review of Tuberculosis, New York

39: 145-274 (Feb.) 1939

Late Results of Thoracoplasty: Evaluation of Results from Fourteen American Clinics in 1,636 Cases. F. S. Dolley, J. C. Jones, Los Angeles, and J. R. Paxton, Olive View, Calif.—p. 145.

Intrapleural Pneumonolysis by the Closed Method: Impressions After Fifteen Years' Experience with 350 Cases. R. C. Matson, Portland, Ore.—p. 162.

Asynchrony of the Movement of the Lower Ribs Following Paralysis of the Hemidiaphragm: Test for Diaphragmatic Paralysis After Operations on the Phrenic Nerve. J. R. Head, Chicago.—p. 169.

Chlorine for the Induction of Artificial Pneumothorax: Preliminary Report. K. S. Ray, N. N. Sen and H. N. Das Gupta, Calcutta, India.—p. 172.

Precordial Friction Rub in Spontaneous Pneumothorax. M. R. Louria, Brooklyn.—p. 176.

*Protamine Insulin and Collapse Therapy in Diabetes Complicated by Pulmonary Tuberculosis. B. J. Elwood, Secaucus, N. J.—p. 181.

Noncaseating Tuberculosis: Case Reports. R. Horton, N. S. Lincoln and M. Pinner, New York.—p. 186.

Sectional Roentgenography of the Chest. C. J. Zintheo Jr., Richmond Highlands, Wash.—p. 204.

*Extrapulmonary Complications of Pulmonary Tuberculosis: Analysis of 1,116 Autopsies. D. Perla and S. B. Biller, New York.—p. 215.

Proteinase and Peptidase Activity of Polymorphonuclear Leukocytes, Monocytes and Epithelioid Cells of Inflammatory Exudates. C. Weiss, San Francisco.—p. 228.

Primary Infection in Adults: Its Clinical and Epidemiologic Aspects. J. A. Myers, P. T. Y. Ch'iu and T. L. Streukens Jr., Minneapolis.—p. 232.

Pathology of Primary Tuberculous Infection in the Adult. H. C. Sweany, Chicago.—p. 236.

Case Finding: Evaluation of Various Technics. R. E. Plunkett, Albany, N. Y.—p. 256.

Coccidioides Infection: Case of Primary Infection in the Lung with Cavity Formation and Healing. O. J. Farness and C. W. Mills, Tucson, Ariz.—p. 266.

Insulin and Collapse Therapy in Diabetes Complicated by Tuberculosis.—Elwood gives the results of collapse therapy for pulmonary tuberculosis and the use of the newer insulins for the control of concomitant diabetes in twenty-one cases. Despite the limitations imposed on the successful continuance of artificial pneumothorax, the employment of this type of therapy restored more than three times as many to health as did elected or enforced rest. The percentage of effective pneumothorax obtained parallels the results observed in nondiabetic persons. Protamine zinc insulin utilized in all stages of both diseases was as applicable as insulin. It revealed limited advantages over insulin in the progressive phases of tuberculosis, greater adaptability and better management in tuberculosis therapeutically controlled or regressing. It is of greatest use in diabetes and arrested pulmonary tuberculosis and its advantages in these cases over insulin are comparable to those noted in otherwise uncomplicated diabetes. In terminal pulmonary disease it has little or no advantage over insulin in the control of the diabetic derangement.

Extrapulmonary Tuberculous Complications.—In an analysis of 1,116 postmortem examinations of patients dying of pulmonary tuberculosis, Perla and Biller found that laryngeal involvement occurred in about one third of the cases. Tuberculous enteritis complicated pulmonary tuberculosis in more than half of the cases. In cases of tuberculosis of the larynx, tuberculosis of the intestine generally develops. The epididymis was practically never involved without the presence of a tuberculous focus in the prostate. Tuberculosis of the genital tract is a ready source for further hematogenous dissemination. Gross renal tuberculosis was absent in more than 90 per cent of the 1,116 cases. In general, involvement of the larynx and intestine occurs in active progressive diseases of the lungs, but renal and genital tuberculosis are associated with fibrotic pulmonary lesions or hematogenous pulmonary tuberculosis. Amyloid disease is particularly prone to develop in tuberculous patients with extensive extrapulmonary complications.

Archives of Dermatology and Syphilology, Chicago

39: 195-386 (Feb.) 1939

Studies of Sex Hormones in Acne: I. Preliminary Report on Urinary Excretion of Estrogen. U. J. Wile, B. F. Barney and J. T. Bradbury, Ann Arbor, Mich.—p. 195.

Id.: II. Urinary Excretion of Androgenic and Estrogenic Substances. U. J. Wile, J. S. Snow and J. T. Bradbury, Ann Arbor, Mich.—p. 200.

Lymphogranuloma Venereum: Serum Lipids and Proteins. I. Rosen, H. Rosenfeld, D. Bloom and Frances Krasnow, New York.—p. 211.

*Toxic Manifestations in the Skin Following Sulfanilamide Therapy. J. W. Tedder, New Orleans.—p. 217.

Tumor-like Keratoses: Report of Case. D. O. Poth, San Antonio, Texas.—p. 228.

Xanthelasma and Leprosy. R. Hopkins, S. H. Black and H. Ross, New Orleans.—p. 239.

Cutaneous Reaction, with Reference to the Surface *p*H, the Reaction to Ointments and Solutions of Different *p*H and the Effect of the Skin in Modifying the *p*H of Applied Solutions. D. M. Pillsbury and B. Shaffer, Philadelphia.—p. 253.

Cholesterol Balance and Low Fat Diet in Psoriasis. J. F. Madden, St. Paul.—p. 268.

*Jaundice Occurring During Treatment of Syphilis. C. G. Lane, Boston.—p. 278.

Quantitative Investigation of Porphyrin Metabolism in Diseases of the Skin. L. A. Brunsting, J. T. Brugsch and P. A. O'Leary, Rochester, Minn.—p. 294.

Neurosyphilis in the Negro. S. Goldblatt, with collaboration of Eleanor Vandoren, Cincinnati.—p. 308.

Circumcision in Treatment of Chancroidal Lesions of Male Genitalia: Further Observations. J. E. Rauschkolb, Cleveland.—p. 319.

Uveoparotitis: Sarcoid Reaction. H. E. Michelson, Minneapolis, with collaboration of F. T. Becker, Duluth, Minn.—p. 329.

Local Arterial Embolism Following an Intramuscular Injection. A. G. Franks, New York.—p. 345.

Dermatitis After Sulfanilamide Therapy.—During the last fifteen months Tedder encountered fourteen cases of sulfanilamide dermatitis. Six patients were cooperative enough to permit thorough study. The individual cutaneous lesions due to sulfanilamide were of three general types: (1) the maculopapular or morbilliform eruptions of rather limited distribution, precipitated or aggravated by exposure to sunlight, (2) widely distributed lesions ranging from macules and papules to edema and urticaria-like wheal formations, with occasional coalescence of the individual lesions, and (3) purpuric eruptions. Purpuric eruptions followed prolonged medication in one case; they did not appear until the third week of treatment. The history did not definitely reveal whether dermatitis had preceded the purpura; however, examination showed many fine macular lesions associated with multiple purpuric lesions. These were chiefly on the dependent portions of the body. There was no evidence of similar lesions of the internal organs. There were several cases of a maculopapular eruption with multiple small unruptured vesicles, limited to the areas exposed to sunlight. This disappeared when the drug was stopped. Three patients agreed to resume modified sulfanilamide therapy after ten days. There was no recurrence of the eruption. The patients were advised to avoid exposure to sunlight. After five days, suberythema doses of ultraviolet radiation were given to previously uninvolved areas of two patients. The dermatitis did not recur. The same amount of ultraviolet radiation precipitated a generalized eruption in the third case. This eruption again responded to elimination of the sulfanilamide, probably indicating that the patient became sensitized to the drug.

Jaundice and Syphilis.—Lane points out that from 1929 to 1935 there have been 100 (among 3,186 new cases of syphilis) cases of jaundice at the dermatosyphilologic clinic of the Massachusetts General Hospital. Arsphenamine was injected 51,241 times at the hospital, showing that jaundice occurred in 3.2 per cent of the cases of syphilis and after 0.2 per cent of the injections. Eleven of the cases of the disease were of congenital origin, nine primary, twenty-five secondary and fifty-five late. The central nervous system was involved in fourteen cases. In only eleven cases was jaundice present longer than eight weeks. In three cases jaundice occurred twice during treatment and in four it lasted for fifteen or sixteen weeks. The latter group comprised cases of late disease treated with a bismuth preparation interrupted by the jaundice. In none were more than ten injections of neoarsphenamine and twenty-two of the bismuth preparation given. The large number of cases of jaundice in which comparatively few injections of arsphenamine are given, as well as the large number of cases of syphilis in which much more arsphenamine produces no jaundice, would argue against arsphenamine as the main factor. It does not seem probable that arsphenamine is the only cause or even the chief cause. The occurrence of jaundice in so many cases of the present series in which bismuth compounds were used brings up the question of bismuth as a partial cause. If the bismuth is activated by liver extract and some slight damage is done by arsphenamine or by syphilis or by both, the bismuth may be the precipitating factor in breaking down certain of the hepatic functions and producing jaundice. The effect of multiple factors is difficult to estimate, but it seems clear that more than one causal agent is at work. Neither arsenic nor syphilis can account for the jaundice in all cases or even in a large majority. In general, in the treatment of this form of jaundice the administration of saline laxatives, forcing of liquids, bed rest and a high carbohydrate and low fat diet have been prescribed. Intravenous use of calcium preparations may be of help. With regard to the continuation of antisyphilitic treatment, it is the author's opinion that in the early stages of syphilis or in the presence of active syphilitic lesions the use of arsphenamine, perhaps in slightly reduced doses, of a bismuth preparation and perhaps of potassium iodide is justified. The clinical picture in the individual case must be the guide. In late and inactive congenital disease active treatment should be omitted until the jaundice has disappeared for several weeks and then resumed, perhaps with a bismuth compound at first. In the cases in which jaundice appears some time after treatment has been stopped, hepatorecurrence should be suspected and the patient given a bismuth compound or mercury and iodide rather than arsenic at this time.

Archives of Pathology, Chicago

27: 201-398 (Feb.) 1939

Pathologic Aspects of Posterior Protrusions of the Intervertebral Disks. W. G. Deucher and J. G. Love, Rochester, Minn.—p. 201.
Phagocytosis of Trypan Blue in Rats of Different Age Groups. J. T. Culbertson, New York.—p. 212.
Endamoeba Histolytica: Experimental Infection of Stomachs of Dogs and Cats. Y. Joranson and J. Simons, Chicago.—p. 218.
Intestinal Lesions in Congenital Syphilis: Histologic Study, with Report of Three Additional Cases, in All of Which Spirochetes Were Identified. R. D'Aunoy and B. Pearson, New Orleans.—p. 239.
*Pathologic Changes in Nervous System in Yellow Fever. L. D. Stevenson, New York.—p. 249.
Primary Systemic Amyloidosis: Involvement of Cardiac Valves, Joints and Bones, with Pathologic Fracture of the Femur. S. Koletsky and R. M. Stecher, Cleveland.—p. 267.
Sensitization, Antibody Formation and Lesions Produced by Tubercle Bacilli in the Albino Rat. E. Hehre and J. Freund, New York.—p. 289.
Histology of Cutaneous Reaction to Brucella Melitensis Antigen. I. Gersh and W. C. Black, Denver.—p. 307.
Elastic Tissue. G. M. Hass, Boston.—p. 334.

Changes in Nervous System in Yellow Fever.—In a study of pieces of cerebral tissue from fourteen persons who died of yellow fever, Stevenson observed marked perivascular hemorrhage in various parts of the brain. He studied the whole brain in twenty cases of yellow fever. The chief lesion found in all the brains was perivascular hemorrhage. These hemorrhages were most frequent in the subthalamic and periventricular region at the level of the mamillary bodies. The temporal pole was the next most frequently involved area and the cerebellum only slightly less so. Perivascular lymphocytic exudate was present in nine cases and with the exception of a single case this was slight. Changes in the nerve cells were insignificant and no inclusion bodies were seen. Reactive changes in the microglia and astrocytes were slight. It is concluded that there is no definite evidence of neurotropism on the part of the virus of yellow fever.

Bulletin New York Academy of Medicine, New York

15: 61-128 (Feb.) 1939

Significance of Albumin Fraction of Serum. A. A. Weech, New York.—p. 63.
General Pathology of Lymphosarcoma. J. Ewing, New York.—p. 92.
Present Status of Serum Therapy in Pneumonia. R. L. Cecil, New York.—p. 104.
*Treatment of Pneumonia with Antipneumococcus Rabbit Serum. C. M. MacLeod, New York.—p. 116.

Antipneumococcus Rabbit Serum for Pneumonia.—The intravenous injection of a small amount of rabbit serum in the treatment of pneumonia, MacLeod states, is not to be recommended without first knowing the results of intradermal and intraconjunctival tests, since anaphylactic shock may occasionally occur in extremely hypersensitive individuals following the intravenous injection of as little as 0.1 cc. of well diluted serum. As a further precaution after the results of the tests are known, it has been the author's practice slowly to inject intravenously 0.1 cc. of the therapeutic serum diluted in 5 cc. of physiologic solution of sodium chloride. If a fall in blood pressure and an elevation of the pulse rate do not occur, it is considered safe to proceed with the therapeutic dose of serum. The reactions which may occur correspond to those following the use of horse serum. A total of 100 patients with conditions including infections due to pneumococci of nine different types have been treated. Eleven patients have died. Of the eleven who died, seven suffered from type III pneumonia. The final judgment on the efficacy of type III antipneumococcus rabbit serum has not been made, but in a certain group of patients a beneficial effect has occurred, particularly in persons before the sixth decade. In such patients a dramatic response may occur, similar to that which is seen so frequently in the serum treatment of type I pneumonia. Of the patients with type III pneumonia who died, only three could be considered as having received an adequate dosage of serum; but the fact that these patients died despite intensive treatment makes it imperative to pursue further the investigation of the therapy of type III infections. If the twenty-six cases of type III pneumonia are excluded from the series, the mortality rate is only 5.4 per cent. The patients who died, other than those in the type III group, illustrate the advantage of early treatment with antipneumococcus serum. All but one of these patients were treated late in the disease; in two, empyema was present associated with severe bacteremia; one patient had meningitis at the time of admission, and the fourth patient was an elderly man with type II pneumonia, who had consolidation of four pulmonary lobes when admitted to the hospital. Defervescence in twenty-five cases of type I pneumonia, treated with concentrated horse serum by the divided dose method, occurred in an average of 22.6 hours from the beginning of treatment. In twenty-six cases treated with unconcentrated rabbit serum, defervescence occurred in an average of 13.8 hours. However, in sixteen of these twenty-six cases the full therapeutic amount of serum was administered in less than two hours, and in this group defervescence occurred on the average in 9.3 hours. The same method of intensive therapy has been applied to the treatment of forty-eight cases of pneumonia due to other types as well. In many instances the full therapeutic dose of serum was given at one injection shortly after the patient was admitted to the hospital. In the remainder, treatment was completed within eight hours. The average time required for defervescence was only 9.75 hours. In practically all these cases the intradermal test with the specific polysaccharide was employed to determine when sufficient serum had been given. The author thinks that in the adult patient with uncomplicated type I pneumonia of not more than three days' duration a dose of 125,000 units should be given as soon as possible. After the third day a somewhat larger initial dose should be given, particularly if the consolidation involves more than one pulmonary lobe or if complications such as bacteremia are known to be present.

Canadian Medical Association Journal, Montreal

40: 105-212 (Feb.) 1939

Influence of a Specific Hormone of the Pituitary on Basal Metabolism in Man. I. M. Rabinowitch, Marjorie Mountford, D. K. O'Donovan and J. B. Collip, Montreal.—p. 105.
Streptococcic Throat Infections: Epidemiology. A. L. McLean, Halifax, N. S.—p. 108.
Clinical Aspects, Complications and Treatment of Streptococcic Sore Throat. P. B. Macfarlane, Hamilton, Ont.—p. 109.
Bacteriologic Aspect of Streptococcic Sore Throat. W. J. Deadman, Hamilton, Ont.—p. 113.
Human Sterility. W. P. Tew, London, Ont.—p. 116.
Empyema. W. G. Carscadden, Toronto.—p. 120.
Lipiodobronchography. J. Gosselin and J. E. Perron, Quebec City, Que.—p. 123.
Studies on Solubility of Quartz and Silicates. C. C. Lucas and Margery E. Dolan, Toronto.—p. 126.
*Incidence of Anemia in Women of the Low Income Class. W. R. Kennedy, Montreal.—p. 134.
Study of 500 Consecutive Cases of Preeclampsia. F. C. Irving, Boston. —p. 137.
*Rheumatic Infection in Childhood: Effect of Surgical Operations on Blood Sedimentation Rate. H. L. Bacal and R. R. Struthers, Montreal. —p. 140.
Comparison of Ether, Spinal and Cyclopropane Anesthesia. J. C. Houston, Charlottetown, Prince Edward Island.—p. 143.
Otitis Media from the Pediatrician's Point of View. G. A. Campbell, Ottawa, Ont.—p. 146.
Use of Urea and Caroid in Chronic Otitis Media. G. E. Tremble, Montreal.—p. 149.
Treatment and Later Management of Coronary Thrombosis. R. M. Lymburner, Hamilton, Ont.—p. 153.
Diverticulitis of the Sigmoid Colon. J. H. Geddes, London, Ont.—p. 157.
The Surgeon's Responsibility in Ontario Accident Compensation Cases. C. H. Hair, Toronto.—p. 160.

Anemia in Women with Low Incomes.—Kennedy states that 1,451 parous women of the child-bearing age, representing the poorer classes of the Montreal population, have been examined at the Child Welfare Association with special reference to the incidence of anemia. On no occasion did any of these volunteer women present themselves because of any symptoms of ill health. They were members of families in which the wage earners were unemployed or the monthly incomes were less than $100. Of the 1,451 cases 824 showed normal hemoglobin levels and 627 various degrees of anemia with hemoglobin levels less than 80 per cent. There were 377 persons with hemoglobin levels of 74 per cent or less. Moderate anemia (hemoglobin from 60 to 69 per cent) was present in 124 cases and severe anemia (less than 60 per cent) in sixty-four cases. The anemia was of the hypochromic type in all instances excepting twenty-one, in which the anemia was of the hyperchromic form. One hundred and nineteen women were seen during early pregnancy and sixty-seven of these had hemoglobin levels of less than 75 per cent. However, the majority of these women were retested one year after the termination of the pregnancy and the same degree of anemia existed. The study of 1,000 records in this series showed there was no conclusive evidence of any definite correlation between the presence of anemia and the number of pregnancies. There was also an absence of any significant correlation between the incidence of anemia and the history of hemorrhage, profuse menstruation or the interval between pregnancies. The approximate protein diet in fifty cases in which hemoglobin levels were between 75 and 100 per cent was compared with fifty cases in which hemoglobin levels were between 25 and 65 per cent. It was found that less protein in the form of beef, pork, liver, chicken and eggs was consumed by the anemic women. Approximately the same amounts of fish and milk were used by the two groups. Under ideal circumstances women require for health up to the age of the menopause about four times as much iron as men. Routine hemoglobin estimation in private and group health examinations will reveal many instances of adults supposedly in good health but actually suffering from varying degrees of idiopathic hypochromic anemia.

Rheumatic Infection in Childhood.—Bacal and Struthers compared the effect of surgical operations to eradicate foci of infection on the blood sedimentation rate of children suffering from rheumatic fever and normal children presenting themselves to the outpatient department for tonsillectomy. In none of the control children was a history of rheumatic fever elicited; likewise none of them gave a family history of rheumatic infection. The sedimentation rates were made immediately before operation, two days after operation, at the end of one week and at the end of two weeks. There were apparently three types of response in the normal children: 1. Some showed no alteration in sedimentation rate or loss of weight after operation. 2. Some showed a sharp rise and sudden fall of the sedimentation rate after operation, with an average loss of 2 pounds (1 Kg.). 3. The sedimentation rate fell to normal within the week following operation in a few children in whom it was elevated before tonsillectomy and continued at a normal rate for the period of observation. The children suffering from rheumatic fever or its manifestations showed reactions comparable on the whole to those of normal children. 1. The sedimentation rates were not affected by operation in some children with acute rheumatic fever who had no evidence of activity as shown by a normal sedimentation rate. 2. Some children who had no evidence of activity as shown by the sedimentation rate showed a sharp rise after operation. This rise in the sedimentation rate apparently may follow any surgical procedure, tonsillectomy, removal of carious teeth or surgical drainage of the paranasal sinuses. 3. In some children in whom the elevated sedimentation rate was the only evidence of activity, the authors concluded after prolonged observation that the elevated rate was probably due to foci of infection rather than to rheumatic fever. These children showed a sudden and sharp drop to normal and the sedimentation rate remained within normal levels during the period of observation. Weight loss in rheumatic children following surgical intervention is greater than in normal children. The surgical removal of foci of infection in a child with rheumatic disease is a definitely more serious undertaking than in the nonrheumatic child.

Endocrinology, Los Angeles

24: 137-296 (Feb.) 1939

Maintenance of the Corpus Luteum and Inhibition of Parturition in the Rabbit by Injection of Estrogenic Hormone. G. P. Heckel and W. M. Allen, Rochester, N. Y.—p. 137.
Induction of Mating in the Dog with Pregnancy Urine Extract. J. H. Leathem and J. A. Morrell, Princeton and New Brunswick, N. J.—p. 149.
Biologic Assay of the Mammogenic Duct Growth Factor of the Anterior Pituitary. A. A. Lewis, C. W. Turner and E. T. Gomez, with technical assistance of W. T. Carroll, Columbia, Mo.—p. 157.
Copulatory Activity in Adult Male Rats Following Castration and Injections of Testosterone Propionate. C. P. Stone, Stanford University, Calif.—p. 165.
Effect of Prolonged Testosterone Propionate Administration on the Immature and Adult Female Rat. M. Mazer and C. Mazer, Philadelphia.—p. 175.
Human Serum Response to Gonadotropic Hormone (Pregnancy Urine Extract). W. Saphir, Katharine M. Howell and R. H. Kunstadter, Chicago.—p. 182.
Further Studies of Male Sex-Stimulating, Female Sex-Repressive Fractions of the Adrenal Glands of Cows, Steers and Bulls. F. M. Pottenger Jr. and D. G. Simonsen, Monrovia, Calif.—p. 187.
Comparison of the Resistance of Male and Female Rats to Cortin. D. J. Ingle, Rochester, Minn.—p. 194.
Refractory State Produced by Adrenal Extract. F. A. Hartman, Lena A. Lewis and K. P. McConnell, Columbus, Ohio.—p. 197.
*Relationship of Hematopoietic Phenomena to Endocrine Disorders in Women. E. A. Sharp and H. C. Mack, Detroit.—p. 202.
New and Improved Method for Preparation of Pineal Extract. A. Steinberg, Philadelphia.—p. 219.
Experimental Phases of the Pineal Problem. N. H. Einhorn and L. G. Rowntree, Philadelphia.—p. 221.
Surgical Treatment of Experimental Insulin Poisoning. F. M. Allen and C. A. Vicens, New York.—p. 230.
Diabetes of Bearded Women (Suprarenal Tumor, Diabetes and Hirsutism): Clinical Correlation of the Function of the Suprarenal Cortex in Carbohydrate Metabolism. H. C. Shepardson and E. Shapiro, San Francisco.—p. 237.
Effect of Salts on Diabetes Insipidus Following Posthypophysectomy in the Rat. H. G. Swann and B. J. Penner, Chicago.—p. 253.
*Build in Relation to Menstrual Disorders and Obesity. Leona M. Bayer, San Francisco.—p. 260.

The Blood and Endocrine Disorders in Women.—During the last several years approximately 450 anemic women have been observed. An analysis of this group by Sharp and Mack revealed that 110 patients, or 25 per cent, had concomitant anemia and endocrine disorders. Complete diagnostic and therapeutic observations were obtained from sixty-eight of these women. A similarity in the symptomatology of the entire group of 110 patients permits classification into three groups: (1) from the menarche to 24 years, primary pituitary-thyroid deficiency, (2) from 25 to 39 years, secondary thyro-ovarian failure,

and (3) from 40 years to the menopause, premenopausal stage. Twenty-four patients were between the ages of 13 and 24 years. Six of the twenty-four had moderate erythrocytopenia on admission, while the remaining eighteen had severe anemia. Purpura was elicited in about half of this group. In the other two groups the average erythrocyte and hemoglobin levels were appreciably lower on admission than were the average levels for group 1. Group 2 resembled group one in that the predominant blood pattern in both was normochromic and normocytic in contrast to the predominance of microcytosis and hypochromemia in the older patients in group 3. Collectively, the average blood and hemoglobin levels showed a greater depletion in the two older groups. The authors believe that there is a definite anemia-endocrine syndrome in women. Definite signs of hypothyroidism, pituitary failure and hypogonadism are common to the syndrome. The anemia is usually normocytic in the adolescent and early adult age groups. Microcytosis and hypochromia appear to be expressions of chronicity of the anemic state, since they occur with greater frequency in middle-aged patients. Achlorhydria was frequent in all three groups, as were low basal metabolic rates, purpura, uterine bleeding, gastrointestinal disturbances and psychoneuroses. The authors believe that simultaneous treatment of the hematopoietic and endocrine disturbances by appropriate medicaments insures a favorable prognosis in a majority of cases. Gonadotropic substance in doses of from 200 to 1,000 rat units should be given daily until the uterine bleeding of immaturity is controlled. Thyroid extract to tolerance when indicated and iron salts are essential elements of the therapeutic plan for all three groups, when signs and symptoms indicate an appreciable degree of thyroid deficiency and mineral imbalance. The bleeding of maturity as well as the amenorrheic state encountered at any age is an indication for theelin in conjunction with gonadotropic substance. Curettement may be indicated at the outset and particularly when endometrial polyposis is present. Bed rest is desirable for patients having the severe periodic or continuous types of bleeding, but the majority of patients can be treated successfully without bed rest.

Build, Menstrual Disorders and Obesity.—In searching for the relationships between configuration and disease Bayer has made, since 1930, anthropometric and clinical studies of 110 women and girls whose complaints were thought possibly to be associated with their build. Those with obesity or menstrual disorders or both have been omitted and ninety cases are finally considered. The dominating symptom was menstrual disorder in forty-six, obesity in thirty-six, thyroid disorder in six and ectodermal dystrophy in two. In an attempt to sort patients into groups according to build, various measurements, indexes and dividing limits were tried until criteria were set up in which the photographs, the anthropometric measurements and the clinical diagnoses were in reasonable agreement. Eventually four groups were defined: feminine, hypofeminine, hyperfeminine and virile. The clinical testimony tends to corroborate the classification both in its lines of demarcation and in its developmental thesis. It has been possible to define each group not only as to build but also as to typical anatomic and physiologic corollaries. 1. In the normal feminine women the build is distinguished by normal body hair and breast development and average proportions, especially with regard to sitting height-stature and trunk-breadth indexes. Clinically these patients are usually normal except that there may be menstrual disturbances of flow and rhythm. 2. The build of the hypofeminine women is distinguished by scanty body hair, small breasts, long legs and a narrow pelvis. Underweight, primary amenorrhea, incomplete genital development, delayed bone age and increased sugar tolerance constitute the associated syndrome. 3. The hyperfeminine subject is distinguished by increased body hair, large breasts, short legs and a broad pelvis. Overweight, advanced bone age and decreased sugar tolerance constitute the clinical syndrome. Menstrual disturbances consist in irregularities of rhythm and flow. 4. The build of the virile type of woman presents excessive body hair, small breasts, short legs, broad shoulders and a narrow pelvis. Overweight, muscularity, secondary amenorrhea and masculinization of the genitals constitute the extreme clinical syndrome.

Johns Hopkins Hospital Bulletin, Baltimore

64: 83-154 (Feb.) 1939

Occurrence and Significance of Myocardial Failure in Acute Hemorrhagic Nephritis. M. R. Whitehill, W. T. Longcope and R. Williams, Baltimore.—p. 83.
Significance of Fibrillation, Fasciculation and Other Muscular Twitchings, with Special Reference to Recent Physiologic Investigations. F. R. Ford, Baltimore.—p. 114.
*Does Ether Narcosis Protect from Anaphylactic Shock? A. R. Koontz and R. T. Shackelford, Baltimore.—p. 125.
Preliminary Report on an Operation for the Cure of Meralgia Paraesthetica. F. C. Lee, Baltimore.—p. 147.

Ether Narcosis as Protection from Anaphylactic Shock.—Koontz and Shackelford gave shock-provoking doses of foreign protein to sixty-nine unanesthetized guinea pigs sensitive to it. Thirty-six of them lived and thirty-three died. Sixty-five guinea pigs sensitive to foreign protein were given shock-provoking doses while under ether anesthesia; fifty of these lived and fifteen died. Of the fifteen that died, one had pneumonia when it received the injections and another a completely atelectatic lung, shown at necropsy. A third died because the anesthesia was forced too far. A fourth death was probably due to the anesthesia. Two animals had pneumonia and atelectasis, respectively, when the protein was injected; these conditions were undoubtedly important contributing factors in their deaths. If these two animals and the one in which the anesthetic definitely caused the death are eliminated, there would be only twelve guinea pigs that died when injected during anesthesia. This would reduce the deaths to 18.5 per cent under anesthesia, as opposed to 47.8 per cent without anesthesia. In none of the animals dying without anesthesia was any underlying pathologic condition of the lungs revealed at necropsy: All of the unanesthetized group that survived showed marked symptoms of anaphylaxis. This was not the case in any of the anesthetized group. Of course, the anesthetic may have masked some of the clinical signs of anaphylaxis. The authors believe that there is a mechanical factor which produces effects entirely aside from the effects of the injected serum. If they are correct, they think that the percentage of deaths in the animals injected while under anesthesia would be further reduced. If these results are to be applied to man, the percentage of deaths is too high to indicate that it is safe to inject foreign serums into human beings under the assumption that anesthesia will afford complete protection against anaphylaxis. However, guinea pigs are more susceptible to anaphylactic shock; hence it is possible that any relative protection afforded by anesthesia may be more effective in man.

Journal of Allergy, St. Louis

10: 105-208 (Jan.) 1939

Food Allergens: II. Atopic Reagins and the Botanic Classification of Foods. O. R. Withers, Kansas City, Mo.—p. 105.
Chemistry of Allergens: I. Isolation of an Active Fraction from Cottonseed. J. R. Spies, H. S. Bernton and H. Stevens, Washington, D. C.—p. 113.
Further Studies on the Allergenic Activity of Protein and Nonprotein Nitrogen Fractions of Ragweed Pollen Extract. A. Stull and W. B. Sherman, New York.—p. 130.
*Roentgen Treatment of Asthma. C. K. Maytum and E. T. Leddy, Rochester, Minn.—p. 135.
Some Observations on the Blood Eosinophil Count in Asthmatics. H. B. Hunt, Birmingham, England.—p. 146.
Oral Administration of Ragweed Pollen. J. H. Black, Dallas, Texas.—p. 156.
Skin Reactions: V. Contour Gage for Measurement of Height and Breadth of Allergic Wheals. H. A. Abramson and M. H. Gorin, New York.—p. 159.
Asthma and Allergic Rhinitis Due to Sensitization to Phthalic Anhydride: Report of Case. R. A. Kern, Philadelphia.—p. 164.
Sulfur Dioxide Poisoning as a Cause of Asthma. A. Romanoff, New York.—p. 166.

Roentgen Treatment of Asthma.—Maytum and Leddy used roentgen rays in the treatment of 215 cases of asthma. These patients represent about 6 per cent of the total with asthma who were treated at the clinic during 1935 and 1936. Twenty of the 215 cases are not included in the present report because treatment was incomplete or the diagnosis of asthma was questionable and another thirty-four cases are not reported because the patients were not followed closely enough. Of the remaining 161 patients, thirty-eight obtained more than 75 per cent relief, which lasted from one month to many months. Twenty-three patients obtained as much relief but are not

included, since other treatment given at about the same time may have been a factor in relieving the symptoms. Twenty-six patients had from 50 to 75 per cent relief for periods of one month or longer. The remaining seventy-four patients experienced less than 50 per cent relief, or more than 50 per cent relief for only short periods of time, and the results are accordingly classed as failures. Two of the patients in this group were completely relieved of asthma but died within a month, one from coronary occlusion and the other from postoperative infection. Five patients felt that their asthma was definitely worse after treatment. Even though at present the authors favor treatment through paravertebral fields, they do not advocate this method to the exclusion of all others. The beneficial effects from roentgen therapy are only temporary, and cures of asthma are not to be expected. They believe that the results obtained justify its use in cases of severe asthma in which relief has not been obtained with other measures.

Journal Industrial Hygiene & Toxicology, Baltimore

21: 29-56 (Feb.) 1939

*Systemic Effects Resulting from Exposure to Certain Chlorinated Hydrocarbons. L. Greenburg, May R. Mayers and Adelaide Ross Smith, New York.—p. 29.
Effect of Certain Impingement Dust Sampling Instruments on Dust Particles. E. L. Anderson, Hartford, Conn.—p. 39.
Toxicologic Studies of N-Isobutyl Amides of Aliphatic Acids. W. Deichmann-Gruebler, Wilmington, Del.—p. 48.
Report of the Use of Biophotometer and Vitamin A Therapy in Industry. O. H. Schettler, R. F. Bisbee and B. H. Goodenough, East Pittsburgh, Pa.—p. 53.

Systemic Effects of Exposure to Chlorinated Hydrocarbons.—Chlorinated naphthalenes and diphenyls are used extensively for insulating wire and in the manufacture of electrical condensers. Because of the obvious need for more clinical data with regard to the effects of exposure to chlorinated naphthalene, Greenburg and his associates report three cases in persons who, after exposure in the course of their work to these known hepatoxic substances, died of acute yellow atrophy of the liver and in whose cases no other etiologic factors could be discovered after careful postmortem and clinical study. The plant conditions under which the patients had worked were carefully investigated. Two of the patients had suffered from at least one previous attack of hepatitis followed by a certain degree of improvement before the onset of the fatal attack. A papulopustular eruption was present in two cases. In one it antedated the systemic symptoms. This type of eruption is characteristic of the dermatitis caused by chlorinated naphthalenes and until recently was the only disturbance attributed to them. In the first case the cutaneous eruption apparently antedated all evidences of systemic disease. Had the girl been promptly removed from further exposure it is possible that her life would have been saved; or had the physicians first called on to treat the jaundice (of whatever origin) in her case or in the second case recognized the danger of continued exposure to the chlorinated naphthalenes these deaths might possibly have been averted. In order to prevent the condition the authors recommend that physicians should report all illnesses occurring among workers exposed to the chlorinated naphthalenes and diphenyls. Persons suffering from the typical acneform eruptions should be removed from further exposure. Employees who have had any liver disease—even a mild catarrhal jaundice—should not work with these substances; neither should those with a history of typhoid, malaria, gallstones or other diseases known to affect the liver adversely. Individuals receiving arsphenamine treatment for syphilis or those susceptible persons who are taking drugs believed to be injurious to the liver should not be further exposed to potential hepatic poisons. Persons working with the chlorinated naphthalenes and diphenyls, if requiring a general anesthetic for an operation, should not be given chloroform or tribromethanol in amylene hydrate and, vice versa, individuals who have recently received such anesthetics should not go back to their former work or to work with other substances believed to be potentially toxic to the liver. Pregnant women should not be exposed because the liver, in pregnancy, appears to be peculiarly susceptible to injury. With proper attention to ventilation and medical supervision of workers the chlorinated naphthalenes and diphenyls can be used in industry with safety.

Journal of Infectious Diseases, Chicago

64: 1-96 (Jan.-Feb.) 1939

Serologic Types of Salmonella Isolated from Paratyphoid in Chicks. E. Jungherr and C. F. Clancy, Storrs, Conn.—p. 1.
Effect of Sulfanilamide on Pneumococcic Infections in Mice. J. M. Ruegsegger and M. Hamburger, Cincinnati.—p. 18.
Studies on Chemical Nature of Factors Producing the Shwartzman Phenomenon. D. Glick and W. Antopol, Newark, N. J.—p. 22.
Effect of Sulfanilamide Therapy on Bovine Mastitis as Indicated by Laboratory Tests. W. G. Hoge, W. V. Halversen and V. A. Cherrington, Moscow, Idaho.—p. 27.
*Chemotherapy in Virus Diseases. E. B. McKinley, Jean Sinclair Meck and Ellen Gray Acree, Washington, D. C.—p. 36.
Effect of Sulfanilamide on Experimental Infections with Bacterium Necrophorum in Rabbits. Elizabeth S. Hemmens and G. M. Dack, Chicago.—p. 43.
Microscopic Agglutination Test for Diagnosis of Swine Erysipelas. A. G. Karlson and S. H. McNutt, Ames, Iowa.—p. 49.
Effect of Normal and Raw Apple Diet on Flora of Duodenum, Ileum and Cecum of Monkeys. G. M. Dack, R. Johnson and L. R. Dragstedt, Chicago.—p. 52.
Action of Prontosil Soluble and Sulfanilamide on Phagocytic Activity of Leukocytes and on Dissociation of Streptococci. Ruth Tunnicliff, Chicago.—p. 59.
*Lymphocytic Choriomeningitis: Discussion of Its Diagnosis in Man. Marion E. Howard, New Haven, Conn.—p. 66.
Use of Sulfanilamide in Experimental Brucellosis. B. D. Chinn, Chicago.—p. 78.
Bacteriophage Absorption by Blood Cells and Bacteria. Martha Applebaum Congress, New York.—p. 83.
Washing of Haemophilus Pertussis Vaccines. J. A. Toomey and W. S. Takacs, Cleveland.—p. 89.
Bacteriology and Immunology of Chronic Staphylococcic Osteomyelitis: II. Effect of Inflammatory Tissue on Antigens and Antibodies. Katherine E. Hite, Chicago.—p. 93.

Chemotherapy in Virus Diseases.—McKinley and his associates treated several experimental virus diseases (rabbit myxoma, rabbit fibroma, herpetic encephalitis, choriomeningitis and St. Louis encephalitis) with sulfanilamide, prontosil and sodium sulfanilyl sulfanilate. None of the compounds were of any therapeutic value in the diseases treated.

Lymphocytic Choriomeningitis.—Howard isolated a strain of the virus of benign lymphocytic choriomeningitis from the spinal fluid of a patient early in the course (sixth and seventh days) of the infection and when the cellular response in the spinal fluid was at its height. Abnormalities were slow in disappearing from the spinal fluid. Neutralizing antibodies in the patient's serum were demonstrated in low titer late in convalescence when mice as the test animals and the virus isolated from the patient were used. The patient's serum did not protect guinea pigs against Rivers' W. E. strain of the virus. Reinoculation experiments and the protection afforded by serum from Rivers' patient W. E. gave proof of the immunologic identity of this strain with others already described. The virus isolated lost its virulence for guinea pigs during constant passage through mice.

Journal of Pediatrics, St. Louis

14: 137-276 (Feb.) 1939

*Neurogenic Tumors of Sympathetic Nervous System in Children: Report of Three Cases Surviving for a Year or Longer. F. H. Wright and B. H. Paige, New York.—p. 137.
Blood Pressure Determination in Children: Effect of the Width of the Cuff. R. Day, New York.—p. 148.
Consideration of Race and Sex in Relation to Growth and Development of Infants. Ethel C. Dunham, Rachel M. Jenss, Washington, D. C., and A. U. Christie, San Francisco.—p. 156.
*Studies in Use of Crystalline Vitamin C (Ascorbic Acid) in Prophylaxis and Treatment of Infantile Scurvy and Some Other Disorders of Infancy and Childhood. A. S. Kenney, New Orleans, and M. Rapoport, Philadelphia.—p. 161.
Epidemic Diarrhea of the Newborn: Report of Three Outbreaks. C. J. Baker, New York.—p. 183.
Factors Influencing Relation of Convulsions and Hyperthermia. M. E. Wegman, Baltimore.—p. 190.
Hypergenitalism in Children. I. P. Bronstein, Chicago.—p. 203.
Acute Infectious Duodenitis (Infectious Jaundice): Report of Seventy-Six Cases. H. A. Slesinger and I. Zeligman, Windber, Pa.—p. 213.
Congenital Syphilis: Ten Year Study of Forty-Five Children. P. J. Howard, Detroit.—p. 220.
Mold Spore Content of Air in Boston, with Reference to Atopic Sensitivity. H. N. Pratt, Boston.—p. 234.

Neurogenic Tumors of Sympathetic System.—Wright and Paige report that three children who had neurogenic tumors of the sympathetic nervous system are alive with no evidence of recurrence or metastasis a year or more after the discovery of the tumors and their consequent removal. One patient is living

six years after removal of a sympathicoblastoma but retains her original signs and symptoms of compression of the spinal cord. One patient is well one year after the removal of a large pelvic ganglioneuroma. One patient is well one year after the discovery of a thoracic ganglioneuroma which has not been excised completely. Surgical removal of sympathicoblastomas followed by radiation therapy may occasionally be effective in preventing recurrence or metastasis.

Ascorbic Acid in Prophylaxis and Treatment of Scurvy.—Kenney and Rapoport gave nineteen infants crystalline vitamin C, 1.83 mg. per kilogram of weight daily, for five months as a prophylactic against scurvy. No clinical or x-ray evidence of scurvy was apparent during the period of observation. Crystalline vitamin C was used in the treatment of twenty-one cases of infantile scurvy and satisfactory healing was obtained. The presence and significance of fever in the scorbutic infant are analyzed, and the lack of temperature elevation following the administration of vitamin C is pointed out. There was no constant effect produced on the capillary resistance (capillary fragility test) in the scorbutic infants following the administration of vitamin C. Crystalline vitamin C seemed to stimulate wound healing in the incision of an infant operated on for pyloric stenosis in whom there was no evidence of healing prior to its administration. Intravenous administration of vitamin C seemed to have no effect on the hematuria in a case of subacute hemorrhagic nephritis.

Maine Medical Association Journal, Portland

30: 21-44 (Feb.) 1939

The Doctor, Family Friend or Public Servant. A. Craig, Bangor.—p. 21.
Gastroscopic Observations on Chronic Gastritis. C. W. McClure and I. R. Jankelson, Boston.—p. 24.
Nonprofit Hospital Service Plans as Presented to the Annual Meeting of the Maine Hospital Association, Lakewood, Maine, Aug. 31, 1938. E. H. Young, Portland.—p. 27.

Medical Bull. of Veterans' Adm., Washington, D. C.

15: 217-332 (Jan.) 1939

Arthroplasty of Hip with Use of Vitallium Cup. H. H. Hopkins and F. N. Zuck.—p. 217.
Cancer of the Rectum. P. E. Johnson.—p. 218.
Transnasal Instillation of Lipiodol into Bronchial Tree. J. R. Boswell. —p. 224.
Associated Pulmonary Tuberculosis and Diabetes Mellitus. W. R. Leverton.—p. 227.
Intestinal Tuberculosis: Report of 3,693 Cases Studied by X-Rays and at Autopsy. H. B. Williams.—p. 236.
Burbot-Liver Oil in Tuberculosis. J. E. Gaines.—p. 240.
Clinical and Roentgenologic Analysis of 150 Cases of Chronic Nonspecific Arthritis. M. L. Weber.—p. 243.
Cevitamic Acid in Treatment of Duodenal and Gastric Hemorrhage. W. S. Anderson.—p. 261.
Syringobulbia. J. F. Casey.—p. 264.
Chronic Polymorphous Light Dermatitis: Report of Case. W. J. Turner. —p. 270.
Folie à Deux. M. K. Amdur and S. T. Ginsberg.—p. 277.
Aplastic Anemia. H. Kessler.—p. 280.
Intravenous Urography. W. M. Caffee.—p. 288.
Pilonidal Sinus. H. B. Cupp.—p. 291.
Bacteriologic Examination of Eating Utensils. C. L. Carlisle and A. O. Hartinger.—p. 294.

Northwest Medicine, Seattle

38: 37-76 (Feb.) 1939

*Acromioclavicular Dislocation: Conservative Method of Treatment. R. Anderson and E. Burgess, Seattle.—p. 40.
Fracture of the Jaw. A. B. Murphy, Everett, Wash.—p. 44.
Fractures of the Hip Joint: Extra-Articular Fixation with a Single Screw. G. W. Freeman, Seattle.—p. 46.
Painful Shoulders. C. E. Carlson, Portland, Ore.—p. 52.
Use of Therapeutic Iodized Oil in Treatment of Bronchial Asthma. M. W. Moore, Portland, Ore.—p. 55.
Hypoglycemia Following Delivery of a Diabetic with Edema. L. J. Palmer and G. D. Capaccio, Seattle.—p. 58.
Differential Diagnosis and Treatment of Diseases Associated with Enlargement of Spleen or Lymph Nodes. E. E. Osgood, Portland, Ore. —p. 59.

Acromioclavicular Dislocation. — Anderson and Burgess state that acromioclavicular dislocations, easily and quickly reduced in most cases, prove exceedingly difficult if not impossible to hold reduced by the unsatisfactory dressings in current use. Regardless of the degree of dislocation, a reduction can usually be effected in fresh cases by elevating the shoulder upward and forcing the outer end of the clavicle downward, thus opposing the joint surfaces. Uninterrupted maintenance in this position for a period of several weeks will allow the ligaments to heal. The authors believe that a dependable and physiologic means whereby acromioclavicular dislocations may be reduced and held is provided by use of Anderson's suspension-hammock clavicle splint. To this splint one addition is made, a single strap over the injured shoulder. This strap attaches to the frame of the splint, front and back, and furnishes a means whereby the clavicle is firmly held down in normal position. With this method reduction cannot be lost, yet there is no undue compression on axillary or shoulder structures and the patient is permitted comparatively free use of the arm. The splint allows elevation of the shoulder by suspension along correct anatomic lines, since adjustable points of motion lie over both the sternoclavicular and shoulder joints. The hammock is molded to conform to the normal axilla and is constructed of resilient rubber, avoiding compression of the axilla. Since the weight of the shoulder is transmitted first to the sternoclavicular area and then to the base of the splint, there is no tendency for dragging or instability. The acromioclavicular strap which passes over the injured shoulder furnishes a means of counterpressure which is mechanically secure, since it is attached to the front and back of the same frame that supports the hammock. By this method patients are ambulatory and can wear their regular clothing. They are unusually comfortable with the splint in place. General anesthesia is unnecessary in reducing the dislocation and applying the splint; in fact, application is facilitated by having the patient sitting or standing. An injection of morphine will usually suffice. The splint is left continuously in place throughout healing. When only the capsular ligaments are torn and the conoid and trapezoid ligaments are intact, splinting for from two to three weeks is sufficient. In complete dislocations the fixation should remain in place for at least six weeks; frequently twelve weeks is necessary for complete healing. Care should be taken not to use the arm for lifting or any other heavy work. The strap across the injured shoulder should be kept tight. Regular x-ray inspection should be made to see that reduction is firmly maintained. Following removal of the splint, graduated active restoration of the function of the shoulder is carried out. The conservative method outlined will not be applicable in all cases. Old dislocations which have gone untreated and the occasional fresh one which is difficult to hold reduced because of the interposition of soft tissues in the joint will need an open reduction. Postoperative splint fixation for six weeks or more should be regularly carried out as supplementary support to internal fixation.

Public Health Reports, Washington, D. C.

54: 149-204 (Feb. 3) 1939

Protein Tyrosine Reaction: Biochemical Diagnostic Test for Malaria. H. O. Proske and R. B. Watson.—p. 158.
Chronic Ulcerative Cecitis in the Rat. B. F. Jones and H. L. Stewart. —p. 172.

Rocky Mountain Medical Journal, Denver

36: 73-144 (Feb.) 1939

Oral Lesions as Sources of Infection: Their Diagnosis and Treatment. W. W. Cogswell, Colorado Springs, Colo.—p. 90.
Nutshells and Kernels in the Bronchus. F. L. Stauffer, Salt Lake City. —p. 93.
Treatment of Asthma. T. D. Cunningham and J. C. Mendenhall, Denver.—p. 97.
A Layman Looks at Hospitals. P. H. Holme, Denver.—p. 100.
Choice of Anesthetic Agent. C. W. Metz, Denver.—p. 102.
*Gastrointestinal Symptoms in Anorectal Disease. H. Gauss, Denver. —p. 106.

Gastrointestinal Symptoms in Anorectal Disease.—In discussing the digestive disturbances referred by anorectal disease Gauss cites in detail a case, among fourteen others, in which the digestive syndrome suggested peptic ulcer and irritable colon but examination revealed hemorrhoids, the removal of which was followed by rapid improvement. Apparently in this case the hemorrhoids were responsible for the digestive distress. The mechanism of the production of digestive symptoms of anorectal origin is generally considered as taking place through the sympathetic and parasympathetic nervous system. It is believed that a constant irritation at the anorectal region may give rise to the irritable colon syndrome and that this may be followed by the gastric irritation syndrome. There are no digestive symptoms which are pathognomonic of anorectal origin. In thirteen cases the successful treatment of

the anorectal disease was followed by prompt relief of the digestive distress. The author did not encounter gallbladder, appendical or true peptic ulcer syndromes as reported by other investigators. Practically all his patients complained of the irritable colon syndrome. The symptoms complained of were chronic constipation, unsatisfactory infrequent stools, incomplete stools, tenesmus, cathartic or enema habits, occasional attacks of diarrhea, abdominal distress under the left and right hypochondria and in the left iliac region, flatulence and belching. In some cases the gastric irritation syndrome was present. Heartburn in the epigastrium and sometimes under the left costal margin, which occurred several hours after eating, was relieved by sodium bicarbonate. While the gastric distress in anorectal disease resembles the peptic ulcer syndrome, it can be easily differentiated from true peptic ulcer by the diffuse area it involves, by its lack of definite periodicity and by x-ray study which does not reveal organic changes in the stomach or duodenum. The gastrointestinal symptoms are purely functional in character and clear up when the offending lesion at the anorectal region is corrected.

South Carolina Medical Assn. Journal, Greenville

35: 27-56 (Feb.) 1939

My Experience with Transurethral Surgery of the Prostate Gland. W. R. Barron, Columbia.—p. 27.
Urethral Stricture in the Female. I. A. Phifer and R. A. Way, Spartanburg.—p. 31.
Practical Uses of the Levin Tube. J. A. Bradley, Florence.—p. 34.
Gynecologic Endocrinology. J. D. Parker, Greenville.—p. 37.

Surgery, St. Louis

5: 161-326 (Feb.) 1939

Polypoid Disease of the Colon: Proposed Surgical Procedure in Selected Cases. R. F. Hedin, Chicago.—p. 161.
Gradual Complete Occlusion of the Celiac Axis, Superior and Inferior Mesenteric Arteries, with Survival of Animals: Effects of Ischemia on Blood Pressure. A. Blalock and S. E. Levy, Nashville, Tenn.—p. 175.
*Effect of Partial Gastrectomy on Acidity and Peptic Activity of Gastric Juice. F. B. St. John, C. A. Flood and J. A. Gius, New York.—p. 179.
Tuberculosis of the Stomach. L. Chaffin, Los Angeles.—p. 186.
Critical Survey of Peritoneoscopy. E. T. Thieme, Ann Arbor, Mich.—p. 191.
Technic of Injection Treatment for Inguinal Hernia. H. I. Biegeleisen, New York, and I. J. Tartakow, New Rochelle, N. Y.—p. 202.
*Gynecomastia. H. O. Wernicke, Chicago.—p. 217.
Removal of Benign Tumors of Breast Without Visible Scars. W. W. Babcock, Philadelphia.—p. 226.
Nonfatal Rupture of the Left Main Bronchus from External Trauma: Report of Case. F. W. Jones and P. P. Vinson, Richmond, Va.—p. 228.
Acetylation of Sulfanilamide. J. D. Stewart, G. Margaret Rourke and J. G. Allen, Boston.—p. 232.
Organization and Technic of the Blood Bank at the Philadelphia General Hospital: Experiences with 1,000 Transfusions. C. S. Cameron and L. K. Ferguson, Philadelphia.—p. 237.
Operation for Dislocated Semilunar Bone of the Wrist. H. R. Mahorner and W. H. Meade, New Orleans.—p. 249.
Effect of Experimental Hyperthyroidism and Hypothyroidism on Concentration of Cholesterol in Hepatic Bile. J. Johnson and Cecilia Riegel, Philadelphia.—p. 260.
Etiologic Factors in Acute Appendicitis: Based on Study of 3,400 Cases. D. C. Collins, Los Angeles.—p. 267.
Circumcision. E. L. Brodie, Buffalo.—p. 271.

Effect of Gastrectomy on Gastric Juice.—St. John and his colleagues analyzed the gastric secretion of twenty-six patients after partial gastrectomy for peptic ulcer. Eleven patients had originally suffered from gastric ulcer, thirteen from duodenal ulcer and two from combined ulcers. The interval which had elapsed between the operation and the time of examination varied from one month to nineteen years. Free hydrochloric acid was absent in twenty-two cases, diminished in three and within normal limits in one. Combined acidity exceeded 10 degrees in sixteen of the twenty-six cases and was as high as 24 degrees in a case of achlorhydria. The p_H of the gastric contents not containing free hydrochloric acid varied between 4.2 and 6.4 and was in the neighborhood of 5 in the majority of instances. The p_H of the specimens containing free acid was approximately from 1.2 to 1.4. No explanation could be found for the failure of anacidity to develop in four of the cases. Achlorhydria was usually manifested in patients recently operated on and in those operated on from five to fifteen years previously. There was no tendency for free acidity to persist in patients who had originally suffered from ulcer of the duodenum. Two of the four patients whose gastric secretion still contained free hydrochloric acid had extensive gastric resections. It was impossible to determine in retrospect the amount of stomach which had been removed in many instances. The impression was gained, however, that the antral portion of the stomach had not been completely removed in some of the patients with anacidity. Determinations of pepsin were carried out in twenty-four cases. The results show a marked diminution in the peptic activity of gastric juice after partial gastrectomy in almost all instances. In all but three cases the amount of pepsin was found to be below the range found in patients with peptic ulcer who were not operated on. In two instances no peptic activity was demonstrable. The specimens which contained free hydrochloric acid showed relatively large amounts of peptic activity. Twenty-two patients of the group, twelve of whom have been followed for more than three years, have been completely free of symptoms of ulcer during the entire follow-up period. The remaining four patients have suffered from recurrent abdominal pain or melena, attributed in each instance to jejunal ulcer. In one of these patients the presence of jejunal ulcer was proved at exploration. The gastric juice of this patient contained free hydrochloric acid. The other three patients who had had recurrent symptoms showed anacidity. The studies offer no explanation for therapeutic failure in these cases. In most instances, however, the occurrence of achlorhydria after partial gastrectomy for peptic ulcer offers a satisfactory explanation for the successful results.

Gynecomastia.—Wernicke reports four cases of gynecomastia with similar characteristics. All but case 4 were unilateral. All gave a history of trauma. All occurred while the patients were in their teens. Not one of them showed any glandular evidence of disturbance except of the testicles and all but patient 2 had an atrophied left testicle. The Aschheim-Zondek test was negative in the three that were given treatment (testosterone propionate). The other, patient 3, was not examined as he did not return. Libido was increased in two of the three cases treated and was very much present in case 3. If case 2 were merely one of testicular hypofunction, for the testicles were equal in size, it might have been expected that testosterone would stimulate them enough to cause at least some change in the breast; but it had no apparent effect. Nor has anterior pituitary substance had any effect in this patient after two months of treatment. Favorable results were obtained in cases 1 and 4, as opposed to the unfavorable result in case 2, in spite of the fact that in all practically the same treatment was administered. This may be due to two factors. In cases 1 and 4 there was marked atrophy of the left testicle, while in case 2 the testicles were equal in size and apparently normal. In cases 1 and 4 the breast enlargement occurred earlier after puberty (at 16 and 14 years respectively) than in case 2, in which the breast enlarged when the patient was 19 years of age. Patient 4, whose breasts enlarged at 14 and whose treatment was given at 16, responded more quickly than patient 1, whose breast enlarged at 16 and received treatment at 20. Age, therefore, may be an important factor. The favorable outcome in two of the three cases of gynecomastia treated with testosterone propionate suggests that endocrine therapy should be given a thorough trial before surgical removal of the breast is advised. In case 1 enlargement of the breast recurred spontaneously, associated with recurring atrophy of the left testicle. The resumption of treatment with testosterone has produced no change in three weeks (after 165 mg. of the substance). This suggests that probably replacement therapy with testis hormone preparations at regular intervals will be found necessary to maintain a cure once it has been effected.

Wisconsin Medical Journal, Madison

38: 85-168 (Feb.) 1939

Preparation of the Jaundiced Patient for Surgery. R. W. McNealy, Chicago.—p. 101.
Prevention of Behavior Problems in Children Through Adequate Prenatal Care. R. A. Jefferson, Milwaukee.—p. 107.
Sternal Marrow Aspiration. M. Hardgrove and L. J. Van Hecke, Milwaukee.—p. 111.
Thoracoplasty: Analysis of Seventy-Seven Cases. E. R. Daniels and L. H. Kingsbury, Wales.—p. 114.
Styes. A. G. Dunn, Stevens Point.—p. 117.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Anaesthesia, Manchester

16: 41-80 (Jan.) 1939

Premedication: Physiologic and Other Considerations. J. D. Stewart.—p. 41.
Ether Convulsions: Case. W. D. Steel.—p. 64.
The Teaching of Anesthetics. J. V. Human.—p. 67.

British Journal of Tuberculosis, London

33: 1-72 (Jan.) 1939

Clinical Aspects of Pneumothorax Therapy as Illustrated by Results Obtained in 191 Cases of Completed Treatment. O. Hjaltested and K. Törning.—p. 4.
Some Observations on Alpine Climate. B. Hudson.—p. 16.
Tuberculous Tracheobronchitis. F. C. Ormerod.—p. 29.
Etiology and Pathology of Tuberculous Empyema. A. H. Penington.—p. 36.
*Role of Arthrodesis in Tuberculosis of the Hip Joint. E. H. A. Pask.—p. 42.
Asbestosis of the Lungs: Case. P. Arnold, J. R. Beal and H. A. Cookson.—p. 45.
The Spero Industries.—p. 48.

Arthrodesis in Tuberculosis of Hip Joints.—Pask states that over a period of four and a half years 131 patients (seventy-six adults and fifty-five children) have been admitted to Wrightington Hospital with tuberculosis of the hip. Arthrodesis was performed on eleven of these patients (nine adults and two children). It is the author's practice to operate only when the disease may be said to be reasonably quiescent. In very young children such an extensive operation is never justifiable. Arthrodesis of the hip is not a life-saving measure; its purpose is the conversion of a weak, yielding ankylosis into a sound, immobile, painless fixation which will not yield to weight bearing and will not alter its angle at a later date. The combined operation of intra-articular and extra-articular arthrodesis has been done whenever possible. The combined procedure has the advantage of removing all the diseased tissue at the time of the operation, and if for any reason the extra-articular fixation is unsuccessful there is a possibility of a firm ankylosis following the approximation of the denuded femur and acetabulum. The graft in every case was taken from the anterior part of the ilium. The lower part of the graft was not detached from the ilium before it was turned down; this is important, as the chances of the graft taking are considerably increased by adopting this method. In eight of the eleven patients operated on healing occurred by first intention, in three the wound broke down and of these one ultimately died with multiple sinuses. A firm bony ankylosis in good position was obtained in nine cases; in one case the ankylosis was not absolutely firm, but the patient was working and suffered no disability; the patient who died also showed a bony ankylosis in spite of severe suppuration. Five of the patients are working at their normal occupation, three are fit for work but are unemployed, one is doing domestic duties at home and only one is unfit for work.

British Medical Journal, London

1: 147-198 (Jan. 28) 1939

Special Field of Neurosurgery. G. Jefferson.—p. 147.
Unusual Case of Lead Poisoning. G. E. Beaumont and R. Wyburn-Mason.—p. 150.
Plea for the Freer Use of Blood Transfusion in Obstetrics. J. Stallworthy.—p. 153.
*Nature of Growing Pains and Their Relation to Rheumatism in Children and Adolescents. J. C. Hawksley.—p. 155.
Congenital Occlusion of Posterior Nasal Choanae. D. B. Kelly.—p. 157.
*Erythema Nodosum Associated with Acute Tuberculous Cervical Lymphadenitis. B. C. Thompson.—p. 159.

Relation of Growing Pains to Rheumatism.—After a lapse of four years Hawksley reexamined sixty-four unselected cases from the 115 cases of growing pains seen in 1934. None showed any evidence of cardiac involvement. Adding these cases to Sheldon's, it is seen that of 253 children followed up for four years at the Hospital for Sick Children evidence of rheumatic heart disease developed in only two, or less than 0.8 per cent. The incidence of cardiac rheumatism in 301,392 school children examined in 1936 was 0.8 per cent. Growing pains and rheumatism resemble each other only to the extent that both produce pain in the limbs. A correct differential diagnosis is imperative, for, while rheumatic cases with potential carditis should be treated by rest, it is bad to make invalids out of children with growing pains by treating them for rheumatism. The following clinical features serve to distinguish the two conditions: 1. Rheumatism affects joints and is usually accompanied by tenderness on pressure and movement. There may be redness, swelling or effusion. In growing pains, muscles, ligaments and tendons are usually the site of the pain; tenderness is rare and there is no swelling, effusion or redness. The pain is more nagging and more likely to cause crying in the nonrheumatic case. 2. In growing pains a cause of the pain is often found in postural or orthopedic defect. Tiredness and vague ill health are common to the two diseases, but patients with growing pains are usually sulky and unsociable; this, in the author's experience, is uncommon in rheumatism. 3. Nodules do not occur except in rheumatism. 4. There is no significant change in the temperature in cases of growing pains. There is also no tachycardia. 5. Cases of growing pains as a rule show no anemia; rheumatic cases frequently do. 6. In cases of growing pains there is no antecedent sore throat. 7. There is no lengthening of the PR interval on electrocardiography in cases of growing pains.

Erythema Nodosum and Tuberculous Lymphadenitis.—Thompson describes six cases of erythema nodosum associated with acute tuberculosis of the cervical lymph nodes. The tuberculous infection is believed to be recent and to have gained entrance by way of the tonsil in three, septic follicular tonsillitis having been a contributory cause of this port of entry and possibly also of the subsequent softening and suppuration of the tuberculous lymphadenitis. In the other three cases, tuberculosis was known to have been present for a number of years. The exacerbation in the cervical lymph nodes concurrent with the onset of erythema nodosum is attributed to reactivation of tubercle bacilli latent in the lymph nodes in two cases and in the pulmonary parenchyma in the third case. However, the possibility of exogenous superinfection must be admitted. The pathogenesis of the cutaneous lesions is discussed and their identity as hematogenous tuberculous foci is suggested by the concomitant phlyctenular keratoconjunctivitis in two cases. These lesions underwent exacerbation and remission more or less coincidentally. This occurrence suggests that erythema nodosum may signalize the development of resistance by the host in addition to cutaneous hypersensitiveness, or in other words the accompaniment of allergy by immunity. The paradox of an effect at once beneficial to the lymphadenitis and deleterious to the phlyctenular disease accords with Rich's theory of immunity and allergy as separate, even antagonistic, entities, the latter causing caseation and destruction in defensive tubercles built up by the former.

Indian Medical Gazette, Calcutta

74: 1-64 (Jan.) 1939

Etiology of Tropical Macrocytic Anemia. L. E. Napier.—p. 1.
Pathogenesis of the Commoner Types of Splenomegaly Met with in India. M. N. De and B. P. Tribedi.—p. 9.
Study of Treatment of Tetanus Based on a Review of Thirty-Eight Cases from the Year 1932-1937. M. G. Kini and S. Venkateswara.—p. 14.
Mapharside in Treatment of Syphilis: Clinical Study. R. V. Rajam and N. Vasudeva Rao.—p. 24.
*Probable Cause of the Difficulty of Treating Chronic Amebic Infection in This Country. H. Ghosh.—p. 27.
Intra-Uterine Infection of the Fetus with Leptospira Icterohaemorrhagiae. B. M. Das Gupta.—p. 28.
New Method for Determination of Small Quantities of Cocaine in Presence of Novocaine. K. N. Bagchi, H. D. Ganguli, P. N. Mukerjee and J. N. Banerjee.—p. 29.
Further Observations on Leptospiral Infections in Calcutta. B. M. Das Gupta.—p. 31.

Cause of the Difficulty of Treating Amebiasis.—It is generally known that acid reaction of stools favors the life and growth of Endamoeba histolytica. On this hypothesis Ghosh treated three patients with chronic amebiasis, whose stools were highly acid to litmus, with one course of six injections of 1 grain (0.065 Gm.) of emetine followed by the oral administration of freshly prepared liquid extract of kurchi for twelve consecutive days while the patients were kept mainly on a protein diet with a restricted amount of carbohydrate. The stool turned alkaline after forty-eight hours. The restricted diet was enforced in each

instance for four weeks and the patient was advised to test the reaction of the stool daily with litmus paper. The restriction of diet was lifted after four weeks but the patients were instructed to avoid rice and sweets as much as possible. During the period of observation several examinations of the stools of each were made; up to the time of writing all three patients were free from amebas. The patients had been following instructions regarding diet, though they said that it was hard to avoid rice and sweets. The general health of these patients has greatly improved. The author draws no conclusion but does suggest that in treating cases of chronic amebiasis strict attention should be paid to the adjustment of the diet in such a way as to keep the reaction of the stool alkaline. Alkali by mouth can change the reaction of the urine but has little influence on the reaction of stools. A change to atta from rice changes the reaction of the stool from acid to alkaline.

Irish Journal of Medical Science, Dublin

No. 157: 1-48 (Jan.) 1939

Medicine: Yesterday, Today and Tomorrow. W. Langdon-Brown.—p. 1.
Hospitals and Public Health. C. J. McSweeney.—p. 15.
Crime and the Doctor. J. Shiel.—p. 26.
Some Aspects of Ancient Medicine. M. E. Tapissier.—p. 36.

Lancet, London

1: 129-188 (Jan. 21) 1939

Rehabilitation of the Injured Workman, with Special Reference to the Workmen's Compensation Act. D. Stewart.—p. 129.
*Placental Blood for Transfusion. J. Howkins and H. F. Brewer.—p. 132.
*Prophylaxis of Tuberculous Empyema. L. Roberts.—p. 134.
*Renal Changes in Malignant Hypertension: Experimental Evidence. C. Wilson and F. B. Byrom.—p. 136.
Interruption of Coma in Insulin Shock Therapy. R. Fraser and D. A. Stanley.—p. 140.
Gastric Secretions During Pathologic Hypochloremia. B. M. Nicol and A. Lyall.—p. 144.
Surgical Procedure for Ulcerative Colitis. J. F. Gaha.—p. 146.
*Miners' Dyspnea. J. N. Peterson, J. M. Peterson and C. W. Startup.—p. 147.

Placental Blood for Transfusion.—The average quantity of placental blood that Howkins and Brewer collected from fifty consecutive women at term is small, 47 cc., which compares unfavorably with Goodall's and Grodberg's figures of 125 and 105 cc. respectively. This small yield would necessitate the mixture of from ten to twelve samples to supply the bulk of blood usually employed in an adult transfusion and it is questionable whether this extensive pooling of several bloods, although of the same group, is entirely devoid of the risk of the minor subgroup reactions of agglutination. With regard to sterility, 22 per cent of the samples were contaminated with airborne or genital tract organisms (Bacillus subtilis, Bacillus coli, Bacillus pyocyaneus and Streptococcus albus) after a reasonably aseptic technic. The authors can agree neither with Goodall in his assertion that culture of the collected blood is unnecessary nor with Grodberg in his statement that any stray organisms present are usually killed by the leukocytes—a statement which they have proved to be incorrect, in that their second culture always tallied with the first, and organisms if present on the seventh day of storage always survived up to the time of subsequent culture. This source of blood for transfusion, however carefully perfected the technic of its collection, sterilization and storage may become, is unlikely to rival seriously that available through the voluntary donor system.

Prophylaxis of Tuberculous Empyema.—The incidence of tuberculous empyema in patients with artificial pneumothorax is about 10 per cent and its fatality rate, in published reports, about 50 per cent. Therefore it seems to Roberts that prevention seems especially important. He suggests that persistent or recurrent pleural pain over the lesion indicates severe tuberculosis of the pleura, which contraindicates artificial pneumothorax. The risk of empyema is sufficiently great to make some other form of collapse therapy advisable. The object of artificial pneumothorax is relaxation, not compression, of the lung. High positive pressures to "stretch the adhesions" are not justifiable. After adhesions have been cauterized and collapse has been instituted, a pneumothorax which remains ineffective should be promptly abandoned and other collapse therapy substituted. Oleothorax and extrapleural pneumothorax are valuable in certain cases.

Renal Changes in Malignant Hypertension.—Wilson and Byrom present evidence that chronic interstitial nephritis may be caused by hypertension alone. Compression of one renal artery of 157 rats gave rise to hypertension in 101 (65 per cent). The blood pressure may be elevated as early as eighteen hours after the operation or may begin to rise at any time during the first four weeks. The course of the hypertension varies considerably, but in general two types were recognized: 1. That in which the blood pressure rises gradually over a period of several weeks to reach a steady high level, which has been maintained for nine months in animals still under observation and appears to be consistent with normal health. 2. That in which the hypertension runs a more irregular course and often leads to a state of great weakness, wasting, coma and occasionally convulsions. The close resemblance between the renal lesions produced in the rat by experimental hypertension and those found in cases of malignant hypertension in man bespeaks a common pathogenesis. It provides experimental support for the clinical evidence that malignant hypertension is a form of essential hypertension of which renal disease is but a terminal manifestation. Since a similar picture occurs in the hypertensive rat under conditions which apparently exclude the influence of "toxic" agents, the authors infer that inflammatory changes can result from a hypertension severe enough to produce arterial necrosis. The demonstration that arterial lesions can be produced in the kidney by experimental hypertension also throws light on the clinically malignant course of the human disease; for when vascular lesions occur in malignant hypertension as a result of the high blood pressure they will presumably give rise to a reduction in renal blood flow. This may be expected to aggravate the hypertension, and so a vicious circle will be established in which a rising blood pressure is associated with progressive renal destruction. It appears that not only "essential" hypertension but also hypertension secondary to renal disease can set in motion the vicious circle. This "malignant termination" has therefore no specific character derived from the original disease but is an attribute of the high blood pressure which is common to all. The clinical symptoms in the hypertensive rat are closely related to the human disease. In animals moribund from this condition immediate and lasting improvement, with return of the blood pressure to normal, has been produced by excision of the ischemic kidney. The syndrome appears to be a close counterpart to hypertensive encephalopathy in man (the pseudo-uremia of Volhard).

Miners' Dyspnea.—The Petersons and Startup examined thirty-six coal miners whose respiratory disability (dyspnea) was such that they have had to give up their occupation. From this they conclude that the vital capacity per unit of body surface gives, in these instances, a more reliable estimate of the degree of respiratory incapacity than do the roentgenograms.

Medical Journal of Australia, Sydney

1: 49-92 (Jan. 14) 1939

Sulfanilamide and Other Compounds. R. Beard.—p. 52.
Experiences in Treatment of Urethritis by Sulfanilamide. G. Jose.—p. 54.
Clinical Application of Some of the More Recent Pharmacologic Preparations. K. S. Hetzel.—p. 56.
Orthoptic Treatment of Concomitant Convergent Strabismus. J. R. Anderson and Diana S. Mann.—p. 59.
Further Experiences in Insulin Treatment of Schizophrenia. P. G. Reynolds.—p. 65.
Diverticulosis and Diverticulitis: Autopsy Results. J. B. Cleland.—p. 70.

South African Medical Journal, Cape Town

13: 1-36 (Jan. 14) 1939

Study of 100 Cases of Head Injury. K. Sartorius.—p. 1.
Provisional Stable Standard for Cobra Antivenene and Its Practical Application. M. H. Finlayson and J. M. Grobler.—p. 9.
Leuko-Erythroblastic Anemia: Report of Three Cases. J. Gear and L. H. Becker.—p. 13.
Clinical Studies of the Bactericidal Power of Blood. E. Matthijssen.—p. 15.
Energy Requirements of Normal Adults. E. E. Buttner.—p. 25.
Respiratory Properties of Lymphocytes and the Lymphatic Spread of Cancer. E. E. Faerber.—p. 27.
Three Cases of Unusual Tendon Injuries. J. J. Levin.—p. 29.
Notes on the Distribution of the "Knoopiespinnekop" (Latrodectus Indistinctus). R. H. N. Smithers.—p. 33.
Complications in Tick-Bite Fever: A Survey of Fifty Cases. J. Gear.—p. 35.

Archives des Maladies de l'Appareil Digestif, Paris

29: 1-120 (Jan.) 1939

Secretion Test in Disorders of Pancreas. M. Chiray and M. Bolgert.—p. 5.
Studies on Metabolism of Vitamin C. M. Vauthey.—p. 33.
*Investigations on Hypoglycemia. F. Turyn.—p. 41.
Latent Chronic Pancreatitis. J.-V. Grott.—p. 57.

Investigations on Hypoglycemia.—Turyn says that, since the introduction of insulin in the therapy of diabetes mellitus, hypoglycemia has become more and more frequent and now the symptoms of hypoglycemia are well known. In severe cases they are general weakness, asthenia, abulia, sweats, hunger, tremor, shock, headache, vertigo, diplopia, convulsions, delirium and hypoglycemic coma. In the mild cases the symptoms recall excitation of the sympathetic. There are many theories about the pathogenesis of the symptoms of hypoglycemia but the majority of authors explain their appearance by epinephrine counterregulation. The author says that signs of hypoglycemia concur with widely differing blood sugar levels. Nevertheless, in the majority of cases subjective signs appear with values of from 80 to 70 mg. per hundred cubic centimeters and objective symptoms are generally noticeable with values of from 70 to 50 mg. per hundred cubic centimeters. The simultaneous determination of the sugar content of the venous and of the capillary blood gives variable results. In this report the author is concerned chiefly with this difference in the capillary and venous glycemia and with its relation to the signs of hypoglycemia. He made a series of investigations to determine whether the diverse signs of hypoglycemia are connected with the augmentation or diminution of the difference between capillary and venous glycemia. He determined the sugar content, according to the method of Hagedorn and Jensen, of blood specimens that were obtained from the finger and from the ulnar vein of the same member. From 20 to 30 units of insulin was injected while the persons were still fasting and then observations were made on the pulse rate and the arterial tension; moreover, the persons were carefully watched for signs such as flushing, pallor, dryness of the mouth, generalized tremor and hunger. Studies were made in sixteen cases. On the basis of these observations the author arrived at the conclusion that the symptoms of hypoglycemia appear in relation to the variations of assimilation of sugar in the peripheral tissues, that is to say with the augmentation or the diminution of the difference of the capillary-venous glycemia. The augmentation of this difference manifests itself as a hypoglycemia of great intensity, in which the symptoms of excitation of the vagus nerve dominate. This is then an insulin intoxication. The diminution of the aforementioned difference is accompanied by the symptoms of epinephrine shock. The absence of signs of hypoglycemia, in spite of a low glycemia, can be explained by the absence of variations of assimilation of sugar in the periphery. Epinephrine shock appears when the hyperepinephrinemia succeeds in mobilizing the glycogen of the liver.

Journal de Radiologie et d'Electrologie, Paris

23: 1-48 (Jan.) 1939

Roentgenologic Discoveries in Exploration of Biliary Passages. J. A. Saralegui.—p. 1.
Difficulties in Execution and Interpretation of Electrodiagnosis in Nurslings. Piffault.—p. 15.
*Roentgen Therapy of Furuncles. G. Ronneaux, H. Desgrez and F. Degand.—p. 17.
Tubes for Roentgen Therapy with High Intensity: New Model; Exterior Anticathode. J. Belot.—p. 19.

Roentgen Therapy of Furuncles.—Ronneaux and his associates point out that roentgen therapy of furuncles produces such favorable results that this treatment is being rapidly adopted in France. In this paper they report observations on twenty-six patients who had either grave furuncles (of the face) or carbuncles. A table listing the twenty-six cases indicates the localization of the furuncles or carbuncles, the type of irradiation, the number of treatments, the number of roentgens administered at each session, the total dose and the outcome of the treatment. The first five patients were irradiated with soft rays, the tension being 120 kilovolts and the filter consisting of 1 mm. of aluminum. Another group of six patients was treated with harder rays; the tension was 150 kilovolts and the filter consisted of 0.2 mm. of copper and 2 mm. of aluminum. In the last group of patients the authors employed 180 kilovolts filtered through 0.5 mm. of copper and 2 mm. of aluminum. They gained the impression that the harder type of rays effected a more rapid improvement. In the majority of cases, 50 roentgens each was given in the first two sessions and 100 roentgens in a third session. The treatments were given every other day, so that five days was required. To be sure, in some of the cases the total dosage was greater and a longer period was required. The majority of the patients had furuncles of the face, and the authors observed no grave complications in the course of the evolution. Some had generalized furunculosis. It is difficult to render an opinion on the effect of irradiation of a furuncle on the evolution of furunculosis. The authors gained the impression that the treatment of a furuncle modified the evolution of furunculosis favorably, but they learned that several of the patients had relapses after temporary remissions.

Presse Médicale, Paris

47: 217-240 (Feb. 11) 1939

Studies on Motivity of Bronchi. L. Binet and M. Burstein.—p. 217.
After Twenty Years of Gastric Surgery for Ulcer of Stomach. J. Abadie.—p. 219.
*Tuberculosis and Anal Fistula. R. Kaufmann.—p. 221.

Tuberculosis and Anal Fistula.—Kaufmann says that anal fistulas are in many instances tuberculous. Observations in 101 cases led him to think that it is extremely difficult or even impossible to furnish the proof that a fistula is tuberculous. He shows that the frequency of tuberculous anal fistulas has been exaggerated, because numerous reports in France as well as elsewhere have been based on insufficient evidence. He thinks that some want to justify the belief in the habitual concurrence of tuberculosis and anal fistulas, because this conjecture has the advantage of excusing therapeutic failures. Discussing the histologic aspects and particularly the appearance of giant cells he says that, although it is well known that giant cells are not specific for tuberculosis, reports on tuberculous anal fistulas frequently have no other basis than the microscopic demonstration of giant cells. In the course of fifty-four operations for anal fistulas the author found giant cells in six patients. In three of these the local and general evolution indicated a tuberculous process. But the author does not believe that this was the case in the other three, for the latter patients did not have tuberculosis and they were completely cured. After reporting the clinical histories of these patients the author discusses anal fistulas in patients with pulmonary tuberculosis and relates the histories of fourteen. In the evaluation of his entire material of 101 cases, he first repeats that in the aforementioned fifty-four cases of anal fistulas he detected three that were of a tuberculous nature. In a group of thirty-two patients with anal fistulas he failed to detect a single tuberculous case. Thus in a total of eighty-six cases of anal fistula only three were found that were of a tuberculous nature. Even if the fifteen cases from a department for pulmonary tuberculosis are added, it can be said that in 101 operations for anal fistula the tuberculous nature of the fistula was detected ten times at the most. Returning to the difficulty that is involved in deciding whether an anal fistula is tuberculous or not, the author says that, if the presence of giant cells does not have absolute diagnostic value and if the aspect of the fistula, the presence of pulmonary tuberculosis or the weak condition of the patient are not sufficient proof, all the same the morbid entity of tuberculous fistula does exist and it is necessary to affirm it in the presence of the concordance of the three factors which, when isolated, are not convincing. These factors are poor aspects of the fistula, giant cells and pulmonary tuberculosis.

47: 241-256 (Feb. 15) 1939

*Late Results of Treatment of Bronchial Asthma by Stellectomy. R. Leriche and R. Fontaine.—p. 241.
*Treatment of Staphylococcic Infections by Crude and Purified Specific Anatoxin. A. Bocage, P. Mercier and R. Richou.—p. 243.

Stellectomy in Bronchial Asthma.—Leriche and Fontaine review the late results of stellectomy in bronchial asthma, pointing out that thus far they have employed this surgical therapy in fourteen cases of bronchial asthma. Two of the cases were lost sight of and so the authors were able to determine the late results in only twelve. After giving brief histories of

these cases, they summarize the results in a table. The fifth patient underwent three interventions: chondrectomy, which failed, stellectomy, which seemed to aggravate the condition, and vagotomy, which ameliorated the disorder for about a year, after which time the patient was lost sight of. This case is also excluded from the estimation of the late results and so only eleven cases remain, in all of which either unilateral (left side) or bilateral stellectomy was done. In six of these eleven cases, that is, in approximately 55 per cent, the results were favorable. Complete cessation of the asthmatic attacks was observed in two of these cases for periods of thirteen and seven and one half years respectively. In another case there was complete cessation of the attacks for seven years and then there was a partial relapse. In three other cases great improvements were observed, which still persisted after four, five and one half and two and one half years. In five cases, that is in about 45 per cent, the stellectomy failed to produce lasting improvement of the bronchial asthma. The authors think that, among the different surgical methods which have been recommended for bronchial asthma, stellectomy is the method of choice, because the technic is simple and outside of Bernard-Horner's syndrome it causes no neuroparalytic sequels. Infiltration of the stellate ganglion is regarded as a surgical adjuvant; it suppresses the severe asthmatic attacks and thus time is gained; moreover, to a certain extent it may be helpful in selecting the cases that will respond favorably to an operation. The authors conclude from their studies that, when all other treatments have failed, an operation on the sympathetic can be tried to improve the lamentable condition of patients with asthma.

Specific Anatoxin in Staphylococcic Infections.—Bocage and his associates point out that in 1929 Burnet obtained for the first time a true staphylococcic toxin. This prepared the way for the production of a staphylococcic anatoxin (toxoid) analogous to the diphtheric anatoxin (toxoid) of Ramon. The authors have treated staphylococcic infections with a specific toxoid since 1934. In an earlier report (*Presse méd.* **43**:1137 [July 17] 1935; abstr. THE JOURNAL, Sept. 28, 1935, p. 1080) they described the results which they obtained in approximately 100 cases. In the course of the ensuing years they followed as much as possible the fate of their first patients and treated hundreds of new ones and they always found the therapeutic activity of toxoid superior to all the other treatments. In the present report they examine the results that were obtained since June 1937. Following a discussion of toxicogenesis in staphylococci they give their attention to the clinical study of cutaneous staphylococcias. Regarding the mode of application of the toxoid, they say that it is necessary first to test the allergic susceptibility of the subject by subcutaneous injection of 0.1 cc. of the toxoid. If this first injection produces neither fever nor local reactions, treatment is continued with 0.25, 0.5, 1 and 2 cc. The injections are given hypodermically into the supraspinous fossa or into the flank at average intervals of four days. It should not be neglected to precede the treatment by an albumin test of the urine; if this test is positive, it is advisable to defer the toxoid treatment. In subjects who are sensitive to vaccines, the treatment should be begun with 0.05 cc. This dose should be repeated two or three times at two day intervals and, if reactions are absent, the treatment can be continued with the usual doses. In children the toxoid therapy should likewise be begun with 0.05 cc. and this dose should be followed by 0.1, 0.25 and 0.5 cc. The clinical results which the authors obtained with the toxoid are indicated in tables and several case histories are reported. In the conclusion they state that, on the basis of more than 2,000 observations, the efficacy of specific toxoid in the treatment of staphylococcic infections, particularly those of the cutaneous type, appears incontestable. They hope that in the near future they will be able to proceed with more success against the grave forms of staphylococcic infections, especially the septicemias and osteomyelitis. This will be possible when they have at their disposal a purified toxoid of an antigenic power that is still higher than is available at present. Numerous observations made by the authors and by other clinicians and experimental studies confirm their opinion that the antitoxin plays the essential part in the mechanism of antistaphylococcic immunity.

Annales Pædiatrici, Basel

152: 253-308 (Feb.) 1939

*Problem of Etiology of Infantile Acrodynia. R. Debré and A. Névot. —p. 253.
Induced Premature Birth and the Triad Grave Familial Icterus, Congenital Anemia and Universal Congenital Hydrops. Cornelia de Lange. —p. 277.
Vitamin C Metabolism of Healthy and Diseased Children. L. F. Meyer and P. Robinson.—p. 283.
Sulfur and Protein Metabolism of Breast Fed and Artificially Fed Nurslings. S. Blazsó.—p. 302.

Etiology of Infantile Acrodynia.—Debré and Névot call attention to the fact that one of them (Debré) suggested in 1927 that ergotism, ustilaginism, infantile acrodynia (pink disease or erythredema) and pellagra belong to the same nosologic group. Recent reports by Mayerhofer and Dragisic confirm this view. In ergotism and ustilaginism the toxic-alimentary origin has been definitely established and the authors think that the same etiologic factor plays a part in acrodynia and pellagra, although for the latter two disorders the exact cause of the alimentary intoxication has not been demonstrated as yet. In their experiments on animals (mice and monkeys) they show that symptoms similar to those of the aforementioned diseases (vasomotor, trophic and paralytic symptoms) or even death can be produced by feeding the animals with extracts of ergot, of Ustilago segetum, of brown rust of wheat (Tilletia tritici) or of the seeds of corncockles. The animal experiments demonstrated particularly the toxicity of brown rust of wheat, contained so frequently in human foods, but also of blight of wheat and of the seeds of corncockles, which are more rarely ingested. Numerous epidemiologic investigations undertaken by the authors in different parts of France failed to establish that in the regions where infantile acrodynia was prevalent the food taken by the children or the fodder of the cows contained the aforementioned toxic substances. Nevertheless the etiologic problem remains and in order to ascertain the etiology of acrodynia and to see whether the theory of a toxic-alimentary origin is right it is necessary to study carefully the dietary regimen of the little patient and the possible parasitic infestation of his food, including the milk, which may contain toxic substances of a vegetable origin.

Schweizerische medizinische Wochenschrift, Basel

69:141-164 (Feb. 18) 1939. Partial Index

Late and Early Diagnosis of Intraspinal Tumors. W. P. Van Wagenen and J. Rossier.—p. 141.
Acute Myeloblastic Leukemia (Leukemia and Pregnancy). W. Tschopp. —p. 146.
*Aspects of Erythroblastoses of the Newborn. A. Albrecht.—p. 146.
Hemolytic Icterus (Hemolytic Constitution) and Gastric Changes. S. Brändli.—p. 149.
*Nontropical Sprue and Pregnancy. A. Spreng.—p. 150.

Erythroblastoses of the Newborn.—Albrecht says that the collective term of erythroblastosis of the newborn was applied at first to hydrops foetus universalis, icterus gravis familiaris and congenital anemia. Later the term erythroblastosis was extended to include several disorders of nurslings and young children such as Cooley's anemia, the erythremia of Italian authors and Jaksch-Hayem's anemia (anemia infantum pseudoleukemia). About the nature of the erythroblastoses, the opinions are divided. On the one hand they are regarded as a nonspecific reaction of the hemopoietic organs to a previous noxa, on the other hand as systemic diseases. The author shows that the various forms of erythroblastoses differ in severity but have several symptoms in common. The first of these is the erythroblastosis, to which is added a more or less severe flooding out of myeloid cells; the second symptom which they have in common is the swelling of liver and spleen and the third one is anemia. Another factor which indicates that the diseases belong together is their frequent familial concurrence; it has been observed that two or three forms occur in the same family. After reviewing the clinical aspects of hydrops foetus universalis, of icterus gravis and of congenital anemia, the author describes four cases that were observed at the children's clinic in Basel. In the summary he emphasizes that erythroblastosis cannot be regarded as a primary disease of the blood but as a reaction of the fetal hemopoietic organs to a previous noxa. The hematologic symptom is nearly

always present but often only for a brief time; however, it permits the early diagnosis and a suitable treatment. In the reported cases the treatment consisted of injections of a liver preparation and of parental blood and in some cases of blood transfusions.

Nontropical Sprue and Pregnancy.—Spreng says that a review of the recent literature on anemia in pregnancy discloses little about nontropical sprue in pregnant women. He gives a detailed report of a case observed at his hospital concerning a woman who had nontropical sprue, bronchiectasis and pulmonary tuberculosis. In the course of a triplet pregnancy the conditions became greatly exacerbated. The spontaneous, premature delivery of the triplets was followed by grave complications that threatened the life of the patient. The recovery was slow. The author cites another case of megalocytic anemia in a pregnant woman who was hospitalized only at the end of her pregnancy, when she was in a poor and cachectic condition. She died shortly after the delivery as the result of circulatory weakness. In both of these cases the pregnancy severely complicated the nontropical sprue, and the author concludes that it is advisable to interrupt the pregnancy in such cases. Regarding the therapy, he says that in the first case treatment with yeast was the only measure which was really effective. Cases of sprue which develop during pregnancy and perhaps as a result of it are unknown to the author. However, he thinks that the megalocytic anemias, which are so frequently observed in the tropics in pregnant women who have a B_2 insufficiency, might perhaps be considered in this connection.

Archivio Italiano di Anatomia, Bologna

9: 259-376 (Jan.) 1939

*Arteriosclerosis of Brain and Spinal Cord, Especially in Relation to Arteriosclerosis in Other Parenchymal Vessels and to Cerebral Hemorrhage and Softening. G. Lanza.—p. 259.
Total Inversion of Viscera: Case. S. Mondolfo.—p. 338.
Pseudocystic Cavities of Pellucid Septum: Pathologic Significance. F. Cottoni.—p. 349.

Arteriosclerosis of the Central Nervous System.—Lanza made an anatomic and microscopic study of the brain and spinal cord and of other structures in the bodies of seventy-five patients who died between the ages of 54 and 96 years from arteriosclerosis, vascular diseases and diseases other than vascular. The author found that arteriosclerosis of the cerebral vessels is frequent in persons over 60. The disease is more acute in the intraparenchymal than in the extraparenchymal vessels and in the nuclei of the base, especially the lenticular nucleus, than in the cerebral cortex and the spinal cord. In the cerebral cortex the lesions of the gray matter predominate over those of the white matter. Cerebral arteriosclerosis frequently exists in association with arteriosclerosis of the renal-splenic and cardiac gastrointestinal territories. The microscopic aspect of cerebral arteriosclerosis is different from that of arteriosclerosis in the parenchymal vessels of other organs. The hyperplasic delamination of the internal elastic coat of the arteries is moderate. Hyalinosis of a special type, calcification (at the globus pallidus) and arterionecrosis (at the putamen) are frequent. Arteriosclerosis of the spinal cord is more rare and less acute than that of the brain. The former frequently develops in association with the latter. Acute lesions of the wall of the vessels (arterionecrosis) exist at the nuclei of the base of the cerebral territory opposite that in which cerebral hemorrhage took place. The lesions of the nonhemorrhagic area are different from those at the hemorrhagic foci. They tend to break and to form miliary aneurysm of the Charcot-Bouchar type. The lesions of the vessels in cerebral softening follow a chronic evolution which frequently shows the most common aspect of cerebral arteriosclerosis. They tend to diminish the lumen of the vessels and to form a mechanical obstacle to circulation. The author believes that there are two different forms of cerebral arteriosclerosis. The benign form follows a chronic evolution, induces the most common aspects of cerebral arteriosclerosis in the cerebral arteries and ends in formation of cerebral softening. The malignant form follows an acute evolution, induces necrosis of the arteries and ends in cerebral hemorrhage.

Gazzetta degli Ospedali e delle Cliniche, Milan

60: 1-24 (Jan. 1) 1939

*Tumors of Male Breast. G. Bragagnolo.—p. 3.

Tumors of Male Breast.—Bragagnolo reports the occurrence of cancer and of fibro-adenoma of the breast in two men aged 63 and 56 respectively. The conditions are rare. An early diagnosis from the clinical examination of the patient only is difficult. Cancer of the breast develops as a rule in men over the age of 50. The clinical diagnosis is made by exclusion of several other diseases of the breast, especially tuberculosis, syphilitic gumma, chronic mastitis, fibro-adenoma and sarcoma. The tumor cannot be delimited by palpation of the breast. It is continued at some points with the surrounding tissues and joins the skin at other points by means of adhesions. It has lateral lobular nodules which can be felt by palpation of the breast. The condition may follow either a long or an acute evolution. Recurrences may or may not occur. The prognosis depends on the type of the tumor and the opportunity of an early operation, which consists in amputation of the breast and emptying of the axillary cavity. Fibro-adenoma can be delimited by palpation of the breast. The tumor forms neither adhesions to the skin nor lobular lateral nodules. The condition generally follows a benign evolution but may evolute to cancer. Therefore amputation of the breast with removal of the fascia of the large pectoral muscle is indicated. In the case of the cancer reported by the author there was no history of local trauma and of heredity and the patient did not suffer from tuberculosis or syphilis. In the case of fibro-adenoma there was a history of local trauma and of heredity. The clinical diagnosis was confirmed in both cases by the results of the microscopic study of the tumors that were removed by operation. Both patients are in good health and without recurrences (or metastases in cancer) up to now (more than three years in the case of cancer and more than one year in that of fibro-adenoma). The operation in both cases consisted in amputation of the breast followed by either emptying of the axillary cavity (cancer) or removal of the fascia of the large pectoral muscle (fibro-adenoma).

Archiv für Kinderheilkunde, Stuttgart

116: 1-80 (Jan. 24) 1939. Partial Index

Results of Follow-Up Examinations of Forty-Five Rachitic Children Who Had Been Treated with Concentrated Vitamin D_2. R. Schirmer.—p. 1.
*Vitamin C Consumption in Nurslings and Young Children. Erika Mager.—p. 12.
Primary Tuberculosis of Skin in Nurslings and Young Children: Secondary Formation of Lupus; Four Cases. G. Schachenmann.—p. 33.
Different Development of Paratyphoid in Siblings Contracting Disease Simultaneously. H. Wulf.—p. 53.
Frequent Development of Pneumococcic Diseases in Home for Nurslings. W. Goeters.—p. 60.
Rare Deformity of Vascular System as Cause of Attacks of Suffocation. W. Koch.—p. 63.
Bronchial Asthma in Children. J. Cirlea and L. Bogdan.—p. 65.

Vitamin C Consumption in Infants.—In the introduction to this report, Mager directs attention to the fact that C avitaminosis, scurvy, is relatively rare but that C hypovitaminosis has a high incidence. Further she discusses the vitamin C requirements of the human organism and mentions the different methods that have been recommended for the determination of this vitamin in the fluids of the body. In her own tolerance tests with vitamin C she employed the titration method by means of dichlorphenolindophenol and the litmus paper method of Scheer. All urine specimens were examined with both methods, and the comparison of the results disclosed that in most instances the results were practically identical. The tolerance tests were made on eleven nurslings and on eleven young children; a smaller or larger vitamin C deficit was detected in all of them. In nurslings the deficit was nearly always greater than in the young children. The vitamin consumption of nurslings was found to be relatively high in comparison to that of adults and it was also greater than that of young children. The vitamin C requirements of breast-fed nurslings were found to be lower than those of the bottle-fed nurslings. It was observed also that nurslings are incapable of storing vitamin C and that young children have this capacity to a limited extent. All of the children who were examined had more or less pronounced

C hypovitaminoses. The author concludes that, to prevent such conditions, care must be taken that either the food contains enough natural vitamin C or that synthetic vitamin C is administered.

Klinische Wochenschrift, Berlin

18: 73-112 (Jan. 21) 1939. Partial Index

New Orally Active Preparation of Corpus Luteum Hormone. W. Hohlweg and H. H. Inhoffen.—p. 77.
Ascorbic Acid, a Preliminary Stage of Vitamin C. H. Lund, E. Trier, M. Ottsen and A. Elmby.—p. 79.
*Disintegration of Glycogen During Starvation and During Poisoning with Phlorhizin, Curable by Insulin-Dextrose. C. Brentano.—p. 82.
Practicability of Rapid Method of Gander and Niederberger for Determination of Deficit of Saturation with Vitamin C. H. Burmeister and K. Wachholder.—p. 85.
Two Procedures for Determination of Changes in Serum Protein. K. Dirr.—p. 91.
*Cause of Elimination of Vitamin A in Urine. W. Thiele and K. Nemitz.—p. 95.
Hemorrhagic Diathesis in Gastric Carcinoma. O. Schildknecht.—p. 97.

Disintegration of Glycogen.—Brentano describes studies on rabbits which he carried out to determine the capacity for glycogen formation in the musculature and liver during creatinuria. In one group of animals creatinuria was induced by starvation lasting three or four days; in another group creatinuria was induced by poisoning with phlorhizin. Then the animals were given a 50 per cent solution of dextrose in a quantity that provided 10 Gm. of dextrose for each kilogram of body weight; the whole quantity was given in two equal portions rather than at once. In the second experiment the same procedure was employed except that insulin was given in addition to the dextrose. Summarizing his observations in the course of these experiments the author says that hunger and poisoning with phlorhizin produce disintegration of glycogen. Two important manifestations of this metabolic disorder are creatinuria and the impairment of the capacity to form glycogen from administered dextrose in the skeletal musculature. Insulin counteracts the creatinuria that develops during starvation and during poisoning with phlorhizin and at the same time restores the capacity of the muscle to form glycogen. Thus the disintegration of glycogen which takes place during starvation or during poisoning with phlorhizin is curable by insulin. The quantity of glycogen which is stored in the liver is reduced by the insulin because insulin apparently increases greatly the sugar requirement of the muscle. Consequently there remains less sugar for glycogen formation in the liver than is the case when sugar alone, without insulin, is administered.

Elimination of Vitamin A in Urine.—Having gained the impression that the reticulo-endothelial system is important for the storage of vitamin A and its impairment for the urinary elimination of vitamin A, Thiele and Nemitz investigated the appearance of vitamin A in the urine during diseases and during therapeutic measures in which an impairment of the reticulo-endothelial system is to be expected. They examined the urines of syphilitic patients undergoing malaria therapy and of syphilitic patients who were treated with bismuth compounds. They found that vitamin A appears in the urine during malaria as well as during the administration of bismuth compounds. Thus the assumption of a causal significance of the reticulo-endothelial system for the urinary elimination of vitamin A seems to be supported by their observations. They suggest that it might be possible to utilize the urinary elimination of vitamin A in the estimation of the function of the reticulo-endothelial system.

Medizinische Klinik, Berlin

35: 169-200 (Feb. 10) 1939. Partial Index

Sweating Cures in Internal Diseases. E. Kestermann.—p. 169.
Circulatory Weakness in Acute Infectious Diseases and Their Treatment. G. Joachim.—p. 171.
Endocrine Therapy in Hypertrophy of Prostate. Nestmann.—p. 178.
Tuberculosis of Mesenterial Glands and Tuberculous Peritonitis. Frey.—p. 180.
Symptomatology and Treatment of Allergoses. E. Bumm.—p. 182.
*Change of Specific Hypersensitivity in Hay Fever. W. Schmidt.—p. 183.

Change of Specific Hypersensitivity in Hay Fever.—Schmidt first cites reports from the literature which indicate that a change may take place in the specific hypersensitivity in patients with allergic disturbances. For instance, in persons who have changed their occupation on account of hypersensitivity to a certain substance it has been observed that, whereas the sensitivity to the substance that was the offensive agent originally has greatly subsided or entirely disappeared, a new hypersensitivity has developed to a substance with which they come in contact in their new occupation. To be sure, a period of several years generally elapses between this change in hypersensitivity. However, since such cases are rare it is generally accepted in everyday practice that allergy tests need not be repeated. In hay fever particularly it is generally accepted that the same pollen is responsible for the annually recurring attacks. The author too accepted this opinion and repeated desensitization treatments with the same allergens every year. However, some of his patients (seven in all) he tested anew for sensitivity to different pollen extracts. The results were so surprising that in spite of the small number of cases he feels justified in reporting them. On the basis of his results he differentiates four groups of patients. To the first group belong those in whom, although the specific desensitization had succeeded, a new sensitization had developed to types of pollen which formerly had given negative results. In the second group the specific desensitization was accomplished only partially. Sensitivity toward other types of pollens, which originally had produced only slight or negative reactions, had either been added to the original sensitivity or had replaced it. In the third group the attempted desensitization had failed and the sensitivity now included types of pollen which formerly had exerted no specific influence on the organism. In the fourth group the specific desensitization failed and the sensitivity toward the pathogenic types of pollens had further increased but no change had taken place in the allergen. Observations on one patient, who had received no treatment, indicated that the allergens may change spontaneously. Evaluating the practical significance of these observations, the author says that in cases of hay fever in which desensitization is not effective new tests should be made in order to detect hitherto unobserved allergens. Moreover, the annual desensitization treatment should always be preceded by new allergy tests.

Zeitschrift für klinische Medizin, Berlin

135: 363-650 (Jan. 20) 1939. Partial Index

Action of Vitamins on Morphology of Blood. A. H. Müller.—p. 363.
Nature and Significance of Thoracic Leads and Their Relation to Electrical Axis of Different Electrocardiographic Deflections. L. von Unghváry.—p. 388.
Laurence-Moon-Biedl Syndrome. W. Menzel.—p. 423.
Lactic Acid and Circulatory Insufficiency. A. Gambigliani-Zoccoli, R. Giacchero, E. Zambelli and C. Reschia.—p. 457.
How Electrocardiographic Changes May Be Elicited from Hiatus Oesophageus. H. Kalk and K. Koelsch.—p. 537.
Differentiation of Dyskinesias of Biliary Tract. W. Schöndube.—p. 542.
Active Internistic Therapy of Acute Pancreatitis. G. Katsch.—p. 554.
*Roentgenologic Examination of Liver: Gas in Bile Passages and a New Procedure of Hepatolienography. H. H. Berg.—p. 562.
Recognition of Atypical Cases of Pernicious Anemia by Sternal Puncture. S. Thaddea and D. Bakalos.—p. 629.

Roentgenologic Examination of Liver.—Berg points out that signs of accumulation of gas in the hepatic region, particularly in the bile passages, are often detected when in the course of the roentgenologic examination of the region of the gallbladder attention is given also to the liver. He says that gas in the liver is caused by the following changes: (1) internal biliary fistulas, (2) insufficiency (gaping) of the duodenal papilla, for instance after the passage of calculi, and (3) infections of the biliary passages (cholangitis with and without abscess formation) with gas-forming micro-organisms. The author maintains that the conditions mentioned under points 1 and 3 are more frequent than has been assumed heretofore but that it is necessary to search for them. He thinks that roentgenoscopy of the liver is especially advisable in obscure hepatobiliary disorders, for instance if chronic indisposition appears after colics due to calculi, if cholangitis is followed by chills or if postoperative biliary disturbances develop. The symptom of gas in the biliary passages is of special importance in the differential diagnosis of acute abdominal symptoms, because it makes possible the early diagnosis of biliary perforation into the gastrointestinal tract. Following further discussion of these problems, the author emphasizes that roentgenologic examination of the liver, without any contrast medium whatever, may be of great value in some clinical conditions, because the symptom "gas in the bile passages" may prove to be of great diagnostic and therapeutic

value. In the second part of his paper, Berg discusses a new method of hepatolienography. He says that thorium dioxide sol has been largely abandoned as a contrast medium because it is not readily eliminated and may cause hepatic impairment. However, hepatolienography has regained its importance since a new, less harmful contrast medium has been discovered. The author describes how the new contrast medium was discovered and developed and how it is employed. The medium is an iodine sol. It is administered slowly by intravenous injection and in quantities that are computed on the basis of the body weight. Roentgenograms are made fifteen, forty-five and seventy-five minutes after the injection. At the end of twenty-four hours the contrast shadow has usually disappeared. The contrast medium is eliminated mostly in the urine in the form of an organic salt, only a small portion of it appearing in the feces. Since the iodine content of the medium may cause complications, the patient must first be tested for hypersensitivity to iodine. In about one third of the cases slight increases in temperature are observed (about 1 degree C.). Fever, chills, cyanosis or decrease in blood pressure are only rarely observed. Control examinations of patients who received injections of this contrast medium one year ago disclosed no signs of late impairment. The author thinks that some of the secondary effects of the contrast medium must be ascribed to the serious disorders (cancer, hepatic abscess, hepatic cirrhosis and so on) that exist in the examined patients. He discusses some of the most noteworthy observations that were made in the more than 100 cases that were examined with this new method of hepatolienography.

Vestnik Khirurgii, Leningrad

56: 309-652 (Sept.-Oct.) 1938. Partial Index

Pathogenesis of Acute Ileus. N. N. Samarin.—p. 317.
Diagnosis of Acute Ileus. Ya. Ya. Dzhanelidze.—p. 333.
Blood Chlorides in Acute Ileus. V. A. Golovinchits.—p. 353.
*Blood Picture in Acute Ileus. P. N. Demidova.—p. 356.
Roentgenologic Examination in Acute Ileus. E. A. Pchelina.—p. 363.
Basic Principles in Treatment of Acute Mechanical Ileus. M. V. Krasnoselskiy.—p. 377.
Continuous Drainage of Stomach with Thin Tube in Acute Ileus. M. G. Kamenchik.—p. 393.
*Acute Ileus During the Years 1928 to 1938 at the Sklifasovsky Hospital. S. S. Yudin.—p. 410.

Blood Picture in Acute Ileus.—Demidova states that the blood picture in 100 cases of incarcerated hernia showed during the first few hours, before the possibility of the development of dehydration, a moderate increase of the erythrocytes and hemoglobin. The author considers this erythrocytosis to be the result of reflex stimulation of the vegetative nervous system and the outflow of red cells from the reserve depots. This was accompanied by a mild leukocytosis with a moderate shift of the neutrophils to the left. She examined the blood picture in 158 cases of acute intestinal obstruction. The blood picture here presented a marked increase in erythrocytes up to 6,000,000 and a correspondingly high hemoglobin, up to 120 per cent, a leukocytosis of from 12,000 to 30,000, a neutrophil shift to the left, hypoeosinophilia and, in a number of cases, monocytosis. A more detailed analysis showed certain differences in different types of obstructions. Obstruction of the sigmoid in twenty-five cases presented a mild erythrocytosis with a mild leukocytosis (from 9,000 to 15,000), with a moderate shift of the neutrophils to the left, a picture resembling that of the early incarcerated hernia and suggesting absence of toxemia. Ileus of the small intestine in twenty-five cases presented a blood picture with a marked increase of the erythrocytes up to 6,000,000, a leukocyte count up to 23,000 and a marked shift to the left of the neutrophils with the appearance in some cases of immature cells and of myelocytes. The leukocytosis in these toxic cases is soon replaced by leukopenia. The author concludes that the blood picture in ileus has a diagnostic value in reflecting the three stages—that of initial pain and irritation of the vegetative nervous system, that of intoxication, dehydration and thickening of the blood and that of intoxication and beginning infection (peritonitis).

Acute Ileus.—Acute ileus occupied, according to Yudin, the fifth place among the acute abdominal infections treated at the Sklifasovsky Emergency Hospital. Thus during the period from 1928 to 1938 there were treated 6,000 cases of acute appendicitis, 3,500 of extra-uterine pregnancies, 1,400 perforations of the gastroduodenal ulceration, 1,500 of incarcerated hernia and 700 of acute intestinal obstruction. While the mortality rate was markedly lowered during this period for the first four forms of acute conditions within the abdomen, that of acute ileus still presented a mortality of 35 per cent as compared with the former figure of 50 per cent. The author emphasizes the diagnostic significance of the diminution of chlorides, while pointing out that its therapeutic value is somewhat limited. The postoperative prognostic value of the chloride curve is quite definite. Cases in which the chlorides continue to fall despite all measures invariably are fatal. If, however, the chlorides increase as the result of intravenous and subcutaneous introduction of salt solution, the chances for recovery in the gravest cases are much improved. All the author's patients received 2,000 cc. of physiologic solution of sodium chloride before the operation and the same amount immediately after. An additional 3 or 4 liters is administered during the first twenty-four hours by means of the intravenous drip. The author advocates blood transfusion of from 600 to 750 cc. before the operation in order to combat shock, and another of similar amount after the operation in order to diminish the postoperative shock and to neutralize toxemia. While opposed to a universal method of anesthesia, he is partial to the spinal method, which, with proper selection of the cases and perfected technic, presents a number of advantages. He was impressed by the superiority of the radical resection of the involved intestine over the more conservative methods.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 265-376 (Jan. 21) 1939. Partial Index

*Mental Changes in Pernicious Anemia. J. van Baalen and M. M. P. Vroon.—p. 270.
Paratyphoid A (Hepatic Form): Case. A. W. Pot and H. Verhagen.—p. 276.
*Significance of "Peculiar Appendicular Residue" in Roentgenogram. H. E. A. Fermin and G. A. Lindeboom.—p. 283.
Prophylaxis of Traumatic Neuroses. W. G. Sillevis Smitt.—p. 287.

Mental Changes in Pernicious Anemia.—Van Baalen and Vroon show that psychic disturbances may occur when changes take place in the quantity of blood as well as in diseases of the blood. Excessive loss of blood, for instance, may be followed by periods of somnolence, confusion, anxiety and headaches. Giving their attention to the mental changes in the diseases of the blood, the authors show that in polyglobulism, for instance, psychasthenic symptoms, depressive moods or even a syndrome resembling Korsakoff's psychosis may be observed. In polycythaemia rubra nervous symptoms in the form of headaches, dizziness, tinnitus aurium and paresthesias have been noted, but disturbances of a psychotic character have also been observed. Reviewing the literature on mental changes in pernicious anemia, the authors cite several investigators who have made reports about this problem and point out that Roger and Olmer differentiate three stages in the psychic disturbances of pernicious anemia. During the initial stage, mild character changes appear, such as quarrelsomeness, jealousy and peevishness. Sometimes the mental energy decreases. During the second stage there may appear various psychic changes from simple psychic asthenia to a demented condition and even delirious phases with delusions of persecution. The terminal stage is characterized by demented conditions, confusions and hallucinations. Under the influence of modern liver therapy, these disturbances are less frequent. After calling attention to some reports about psychoses in so-called funicular myelitis, the authors report their observations on three patients with pernicious anemia who had symptoms of mental disturbances. The first patient presented paranoid reactions, depressive disturbances, delirious phases and suicidal inclinations. In the two other patients, the changes in the character and in the moods predominated. As the blood picture improved under the influence of liver therapy the psychic disturbances likewise subsided.

Appendicular Residue in Roentgenogram.—Fermin and Lindeboom report that among 100 patients for whom internists had requested roentgenologic examination of the alimentary tract, twenty-seven showed an "isolated" appendicular residue (shadow in the appendix and not in the cecum) after forty-eight hours. None of these patients were later found to have chronic appendicitis. Many of them had symptoms of ulcer. In two of the cases the anamnesis or the examination disclosed signs indicative of chronic appendicitis and the authors think

that these were the only cases in which appendectomy was indicated. Later the authors examined twenty-four persons in whom an x-ray examination of the alimentary tract had not been requested and who were free from abdominal symptoms. They found that four of this group showed an isolated appendicular residue after forty-eight hours. They conclude from these observations that the isolated appendicular residue is of no great value in determining the advisability of an appendectomy. In this regard the phenomenon probably acquires greater importance if it is observed after a longer period; that is, after four days.

Acta Medica Scandinavica, Stockholm

98: 141-288 (Jan. 12) 1939

Composition of the Alveolar Air Investigated by Fractional Sampling: Comparative Investigations on Normal Persons and Patients with Bronchial Asthma and Pulmonary Emphysema. E. Roelsen.—p. 141.
Hyperthyroidism and Iodine Treatment. J. Tillgren and N. Sundgren. —p. 172.
*Mastic Test in Acute Anterior Poliomyelitis. K. G. Kaijser.—p. 209.
*Serotherapeutic Studies on Lobar Pneumonia, Especially Treatment with Rabbit Antipneumococcus Serum. N. I. Nissen.—p. 231.
Clinical Aspects and Occurrence of Icterus and of Its Different Forms. W. Kerppola.—p. 262.
Appearance and Frequency of Desquamation in Scarlet Fever. L.-G. Sterner.—p. 280.

Mastic Test in Acute Anterior Poliomyelitis.—Kaijser says that little attention has been given to the mastic reaction in acute anterior poliomyelitis. Nevertheless, several observers have shown that a type of mastic reaction can be evolved which is characteristic for poliomyelitis. The mastic test has been employed in experimental poliomyelitis in monkeys as well as for the early diagnosis of poliomyelitis in human subjects. The author himself studied the value of the test first in fourteen cases of acute anterior poliomyelitis accompanied by paralysis. He reports the clinical histories of these cases and the outcome of the mastic reaction. It was found that in certain cases of poliomyelitis in which paralysis exists at the time of the examination of the cerebrospinal fluid there is a typical mastic reaction. In the majority of these cases only a moderate flocculation was observed in the tube that contains the strongest concentration and the maximum of flocculation appeared in the second, third and fourth tubes. In the succeeding tubes it subsided and it usually disappeared completely in the sixth or seventh tube. The average curve of the mastic reaction in these cases is represented by the figures 123321000. Having determined that poliomyelitis with paralysis possesses a typical curve, the author studied the mastic reaction in two other types of disorders, namely in ten cases of acute anterior poliomyelitis without paralysis and in five cases in which poliomyelitis was suspected. In the ten abortive cases of poliomyelitis the curve of the mastic reaction was not as uniform or as characteristic as in the cases of poliomyelitis that were accompanied by paralysis. In the abortive cases the maximum flocculation was usually observed in tubes 2, 3 and 4. In the five cases in which poliomyelitis was only suspected, the mastic reaction was as it is under normal conditions. The impression was gained that in these five cases there existed a disorder other than poliomyelitis.

Serotherapy of Lobar Pneumonia.—Nissen gives an account of the serum treatment of lobar pneumonia in the Sundby Hospital in Copenhagen and presents statistical data on cases treated with or without serum in the municipal hospitals of Copenhagen in the period from October 1935 to May 1938. Until the autumn of 1937 the serum treatment was given almost exclusively with horse serum, but since November of that year rabbit serum has been generally used. It was found that when adequate serum treatment is given within the first four days of illness a case mortality of more than 40 per cent can be lowered to less than 10 per cent; when treatment with large doses of serum is instituted on the fifth and sixth day, the mortality may probably be reduced to less than 20 per cent. Even on the seventh day the treatment ought to be tried in severe cases. Treatment with serum not specific for the type gave a lower mortality than treatment without serum, but a typical reduction of temperature was rare after administration of such serum. The therapeutic efficacy of nonconcentrated rabbit antipneumococcus serum is just as great as that of concentrated horse serum; whether it is superior cannot be decided on the basis of the present material. The failure of type specific serum treatment may be due to (1) too late institution of treatment owing to belated clinical or bacteriologic diagnosis, (2) infection with more than one pneumococcus or mixed infection with other bacteria, (3) insufficient dosage, (4) poor quality of serum, (5) bacteremia, (6) preexisting complications, especially cardiac and pulmonary lesions, pregnancy, cirrhosis of the liver, and syphilis and (7) pneumonic complications in the lungs, heart, meninges and peritoneum. Finally, cases will occur in which the infection is so violent from the start that all specific therapy is ineffective. Serum shock was seen in only 5 to 7 per cent of the cases, collapse after one of 222 primary serum injections. Serum shock was not more frequent or more severe, but rather less frequent, after the nonconcentrated rabbit serum preparations than after concentrated horse serum. Serum sickness was far less frequent after the use of concentrated horse serum than after nonconcentrated rabbit serum, occurring respectively in 21 per cent and 47 per cent of the patients, and it was more severe in the patients treated with rabbit serum. Most likely, concentration of the rabbit serum will lower the incidence and intensity of serum sickness. Purulent lung complications were not more frequent in patients treated with serum than in those treated without serum, rather less frequent. The absolute numbers are bound to be somewhat uncertain, because necropsy was not permitted in many of the fatal cases.

Finska Läkaresällskapets Handlingar, Helsingfors

81: 503-606 (June) 1938

*Observations on Action of Aminopyrine on Living Neutrophile Granulocytes in Normal Persons and in Persons Hypersensitive to Aminopyrine. I. Wallgren.—p. 560.
Approximate Determination of Fat Content in Feces. R. Ehrström.—p. 577.
Blood Picture in Intracutaneous Vaccination. Birgitta Knape.—p. 579.

Action of Aminopyrine on Granulocytes.—Examining neutrophil granulocytes in a milieu with successively increased aminopyrine content, Wallgren established a threshold at which most of the cells still performed their ameboid movements and a higher threshold at which most of the cells no longer moved. In cells from normal persons the upper threshold was at an aminopyrine concentration of from 0.2 to 0.24 per cent in cells from two persons hypersensitive to aminopyrine at a concentration of 0.14 and 0.18 per cent respectively. He says that in hypersensitive persons, after the intake of aminopyrine, there is in addition to other symptoms a decrease in the number of neutrophil granulocytes in the peripheral blood. Since the neutrophil granulocytes in vitro withstand an aminopyrine content many times higher than that which appears in the blood plasma after the usual therapeutic dose of aminopyrine, it is not likely that this dose causes a disturbance of the cells in the circulating blood. The occurrence of neutrophil granulocytes in the circulating blood is variable. Leukopenia may occur in the peripheral blood simultaneously with a leukocytosis in the internal organs, and vice versa. In conditions of shock there may be a sudden transport of neutrophil granulocytes from the skin to the internal blood vessels. It does not seem unlikely that the sudden leukopenia which appears in hypersensitive persons after aminopyrine medication takes place in the same way. This presupposes an abnormal sensitivity in the mechanism which regulates the apportionment of the neutrophil granulocytes in the blood vessel system. The fact that the cells from persons hypersensitive to aminopyrine cease their ameboid movements at a lower threshold than do the cells from the control cases may be the expression of such a hypersensitivity in the apportionment mechanism of the neutrophil granulocytes.

81: 607-698 (July) 1938

*Iron Content in Liver in Pernicious Anemia After Some Improvement Following Short Treatment with Liver. C. A. Hernberg.—p. 647.
Two Cases of Unilateral, Partial Aplasia of Adnexa. N. Riska.—p. 651.
Some Cases of Tetany Treated with Dihydrotachysterol. S. Söderlund. —p. 659.

Iron Content of Liver in Pernicious Anemia.—Hernberg states that in a woman aged 60, who died from bronchopneumonia on the tenth day after the start of energetic liver treatment, the hemoglobin content had risen from 23 to 36 per cent, the number of red blood corpuscles had risen from 824,000 to 1,640,000, and the color index had dropped from 1.64 to 1.1. The liver showed a definite siderosis. The total iron in the liver was 637.5 mg., more than six times as much as that previously found by the author in two cases of pernicious anemia in full remission.